AN EXPERIMENTAL TO ASSESS THE EFFECTIVENESS OF KANGAROO MOTHER CARE ON PRETERM BABIES PHYSIOLOGICAL ,BEHAVIORAL AND PSYCHOSOCIAL OUTCOMES IN A SELECTED PEDIATRIC HOSPITAL, KANYAKUMARI.

COIMBATORE

A DISSERTATION SUBMITTED TO THE TAMILNADU
DR.M.G.R MEDICAL UNIVERSITY CHENNAI,
IN PARTIAL FULFILLMENT OF REQUIREMENT
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F	List of experts consulted for content validity
G	KMCAFS • English • Tamil
H	Lesson plan on KMC • English
I	Booklet • English • Tamil
J	Evaluation criteria checklist for validity on intervention

LIST OF ABBREVIATION USED

H	:	Hypotheses
df	:	degree of freedom
NS	:	not significant
χ^2	:	chi square
SD	:	Standard deviation
N	:	Sample Size

CHAPTER I

INTRODUCTION

"Children are the wealth of the nation,

Take care of them,

If you wish to have a strong India"

- NEHRU

Child health is the foundation of the family and wealth of the Nation. Newborn is the very important personality of the home. All family members give him or her warm welcome. Among the major child health challenges facing the world at the turn of the new millennium is the problem of high neonatal mortality. The global burden of newborn deaths is estimated to be a staggering five million per annum. Only 2% (0.1 million) of these death occur in developed countries, the rest 98% (4.9 million) take place in the developing countries. The highest neonatal mortality rates are seen in countries of South Asia resulting in almost 2 million newborn deaths in the region each year, with India contributing 60% (1.2 million) of it.

Preterm birth, also known as preterm birth, is the birth of a baby at less than 37 weeks gestational age. These babies are known as preemies or premmies. Preterm-related causes of death together accounted for 35% of all infant deaths in 2010, more than any other single cause. Symptoms of preterm labor include uterine contractions which occur

more often than every ten minutes or the leaking of fluid from the vagina. Preterm babies are at greater risk for cerebral palsy, delays in development, hearing problems, and problems seeing. These risks are greater the earlier a baby is born.

The cause of preterm birth is often not known. Risk factors include diabetes, high blood pressure, being pregnant with more than one baby, being either obese or underweight, a number of vaginal infections, tobacco smoking, and psychological stress, among others. It is recommended that labor not be medically induced before 39 weeks unless required for other medical reasons. The same recommendation applies to cesarean section. Medical reasons for early delivery include preeclampsia.

Preterm birth is the most common direct cause of newborn mortality. Preterm birth and being small for gestational age (SGA), which are the reasons for low-birth-weight (LBW), are also important indirect causes of neonatal deaths. LBW contributes to 60% to 80% of all neonatal deaths. The global prevalence of LBW is 15.5%, which amounts to about 20 million LBW infants born each year, 96.5% of them in developing countries. Preterm birth is estimated to be the direct cause of 28% of neonatal deaths worldwide.

Preterm babies are at greater risk for neurodevelopment disabilities than full term infants The problems of preterm baby is less able to shiver and to maintain homeostasis. Hypoglycemia is also a risk, especially if SGA.

There may also be hypocalcaemia. Both can cause convulsions that may produce long-term brain damage. The more preterm the baby, the greater the risk of respiratory distress syndrome. Steroids before delivery may reduce the risk but it is still very real. If the baby requires oxygen it must be monitored very carefully as, if the levels are too high, the preterm baby is susceptible to retrolental fibroplasia and blindness. The preterm baby is more susceptible to neonatal jaundice and to kernicterus at a lower level of bilirubin than a more mature baby. They are susceptible to infection and to necrotising enteritis. They are susceptible to intraventricular brain haemorrhage with serious long-term effects.

The preterm children were significantly more likely to be overactive, easily distractible, impulsive, disorganised and lacking in persistence. They also tended to overestimate their ability. Attention deficit hyperactivity disorder (ADHD) was found in 8.9% of the preterm children and 2% of controls. Individuals who were born before 33 weeks of gestation continue to show noticeable decrements in brain volumes and striking increases in lateral ventricular volume into adolescence. About 1 in 4 babies with birth weight below 1.5 kg have peripheral or central hearing impairment, or both.

Based on Maslow's hierarchical theory, the basic need of every individual are love, security and affection. All of which can be expressed through the most old fashioned and natural way of cuddling. The baby throughout the nine-month period in the mother's womb recognizes this sensation of being cuddled in the environment of the womb. This sensation

and feeling of security is ended preterm in the case of the preterm babies, since they have to face extra uterine life before time. Hence preterm infant need more cuddling and security, mimicking the intrauterine environment.

Mothers of preterm babies experience multiple stressors and negative emotions, such as anxiety, guilt, helplessness and depression. The highly technical environment, as well as the appearance and behaviors of the preterm infant frequently lead to disruptions in assuming the maternal role and a diminished quality of mother- infant attachment. These early problems may contribute to prolonged difficulties with mothers and place preterm babies at risk for further cognitive, emotional, behavioral, and developmental problem.

Interventions to improve care during pregnancy, childbirth and the postnatal period as well as feeding are likely to improve the immediate and longer-term health and well-being of the individual infant and have a significant impact on neonatal and infant mortality at a population level. The series of documents on Integrated Management of Pregnancy and Childbirth (IMPAC) provide practice guidance to health workers, and the recent WHO guidelines Optimal feeding of pre term contain recommendations on what to feed, when to feed and how to feed a pre term newborn.

"Kangaroo mother care" is a method of care of preterm babies weighing less than 2 kg. It includes exclusive and frequent breastfeeding in addition to skin-to-skin contact and support for the mother-infant dyad, and

has been shown to reduce mortality in hospital-based studies in low- and middle-income countries. The WHO document Kangaroo mother care: a practical guide provides guidance on how to organize services in health facilities and on what is needed to provide effective "Kangaroo mother care".

Kangaroo Mother Care was initially conceived in Bogota, Colombia in 1978 as an alternative to incubator care for the low bi11h weight baby. Kangaroo Mother Care is a humane, low cost method of care of low birth weight (LBW) infants particularly for those weighing less than 2000gram at birth. It consists of skin-to-skin contact, exclusive breast feeding early discharge and with an adequate follow-up. Advantages of KMC are not limited to the neonates, the mothers too derive benefits out of it. The bond between mother and neonates is strengthened by practicing the technique in neonatal care. KMC, also helps the mother to overcome trauma of the birth that did not go as desired. In this manner, mothers feel more confident to nurture their neonate relive their stress.

Incubator care causes dehydration in preterm and full term. There is a similar effect of maintaining temperature by a cost effective method of care named as kangaroo care. Kangaroo Care, when replaced by an incubator, leads to many benefits for both the baby and mother. In India, most of the population below poverty line, thus restraining them' from sophisticated care for their row birth weight infants.

Thus, Kangaroo Care ensures people from all economic standards to give the needed care for their preterm babies. The preterm babies gain

temperature slowly and prevent hypothermia. Therefore, the preterm baby becomes calm and relaxed. It also helps the baby to conserve energy and bring the organs to normal functioning.

Need for the study.

Each year, some 15 million babies in the world, more than one in 10 births, are born too early, More than one million of those babies die shortly after birth; countless others suffer some type of lifelong physical, neurological, or educational disability, often at great cost to families and society. An estimated three-quarter of those preterm babies who die could survive without expensive care if a few proven and inexpensive treatments and preventions were available worldwide, according to more than 100 experts who contributed to the report, representing almost 40 UN agencies, universities, and organizations. The report explains what is known about preterm birth, its causes, and the kinds of care that are needed.

In India according to the report published recently, India has the highest number of deaths due to preterm births, and ranks 36th in the list of pre-term births globally. The ranking included 199 countries. Of the 27 million babies born in India annually 3.6million are born pretermly, of which 303,600 don't survive due to complications. Nearly half of all child mortality is due to pre-term births, a new report by Save the Children, titled ‘Born Too Soon More than 60% of preterm births occur in Africa and South Asia, but

preterm birth is truly a global problem. In the lower-income countries, on average, 12% of babies are born too early compared with 9% in higher-income countries. Within countries, poorer families are at higher risk.

The 10 countries with the greatest number of preterm births

India: 3 519 100

China: 1 172 300

Nigeria: 773 600

Pakistan: 748 100

Indonesia: 675 700

The United States of America: 517 400

Bangladesh: 424 100

The Philippines: 348 900

The Democratic Republic of the Congo: 341 400

Infant mortality rate is 60 per 1000 live births and neonatal mortality rate is 40 per 1000 live births in India and 44 per 1000 live births in Tamil Nadu and 40 per 1000 live births in Karnataka. Data indicates an alarming situation. The Health for All by 2010 aims for 20 Infant Mortality Rate makes it imperative to develop and low cost effective modality while for caring preterm babies.

The newborn should maintain a temperature of 37 degree C. hypothermia in newborn babies' results in immature development of central nervous system, birth asphyxia, intracranial hemorrhage and failure to maintain an effective thermo neural environment. In preterm and small for

gestational age infant's heat loss is due to high surface area, reduced subcutaneous tissue, reduced brown fat and reduced glycogen stores.

Hypothermia in low birth weight babies, leads to increase in surfactant synthesis and surfactant efficacy, decreased PH, reduced partial pressure of Oxygen (PO2), hypoglycemia, less O2 consumption, diversion of cardiac output to brown fat, increased utilization of caloric reserves, reduced weight gain of infant and reduced blood coagulability. Therefore, it increases neonatal mortality.

Preterm babies who are not developed completely found that the skin-to-skin contact with mother helps in improvement of neurobehavioral development. In 1979, Colombian physician Ray and Martinez suggested mothers to become "human incubators" by holding their preterm babies skin-to-skin like kangaroo style. It is an alternative to NICU care because of high rate of nosocomial infections and lack of resources. Because of Colombian experience, many European countries have introduced Kangaroo care in their nurseries physiological, emotional and physical benefits for both parents and infants by Kangaroo care. Preterm babies in poorly resourced settings often end up in understaffed and ill equipped neonatal care units that may be turned into potentially deadly traps by a range of factors colluding— for example, malfunctioning incubators, broken monitors, overcrowding, nosocomial infections, etc

In developing countries like India, use of incubators in the management of low birth weight babies exerts a heavy financial burden on parents of low birth weight babies. Incubators are not affordable by the family members of low birth weight babies because of high cost. Hence equally effective and low cost methods to manage the low birth weight babies like Kangaroo Mother Care are to be made aware for mothers of low birth weight babies. Kangaroo Mother Care not only prevents hypothermia in low birth weight babies but also improves bonding between baby and mother. And nurses play a prime role in educating mothers of low birth weight babies regarding Kangaroo Mother Care as they are the one who interact more with parents than any other health team member.

The number of neonatal intensive care units (NICUs) in India has increased substantially over the last decade; yet many more are required. There is limited information on the actual costs of setting up and running an NICU in India. Neonatal intensive care stays are among the most expensive types of hospitalizations. Those women who do deliver in health facilities are unable to receive intensive neonatal care when necessary. Level I and Level II neonatal care is unavailable in most health facilities in India, and in most developing countries.

A randomized control trial was conducted to determine the effect of Kangaroo Mother Care (KMC) on breast feeding rates, weight gain and length of hospitalization of very low birth neonates and to assess the acceptability of Kangaroo Mother Care by nurses and mothers. Babies whose birth weight was less than 1500 Grams were included in the study once they

were stable. Results of the study revealed that the neonates in the KMC group demonstrated better weight gain after the first week of life(15.9 ± 4.5 gm/day vs. 10.6 ± 4.5 gm/day in the KMC group and control group respectively) and earlier hospital discharge (27.2 ± 7 vs. 34.6 ± 7 days in KMC and control group respectively). Kangaroo Mother Care given babies will have better weight gain, earlier hospital discharge so Kangaroo Mother Care is an excellent adjunct to the low birth weight baby care.

Sivapriya S, Subash J, Kamala S. (2008) conducted a quasi study study to assess the knowledge of mothers of preterm babies regarding kangaroo mother care and to evaluate the effectiveness of structured teaching programme on kangaroo care among the mothers of preterm babies. A total of 35 mothers were selected for the study. Findings of the study revealed that, the pre-test knowledge of the Kangaroo Care was Nil. After the structured teaching programme post test knowledge of the mother regarding Kangaroo Care was increased. 6 (17.10%) mothers had inadequate knowledge on Kangaroo Care, 25 (71.4%) mothers had moderately adequate knowledge and 4 (11.5%) mothers had adequate knowledge on Kangaroo Care. Kangaroo Mother Care is a simple low cost and highly effective intervention for low birth weight babies. And also teaching programmes can improve the knowledge of mothers on Kangaroo Care. So, educational programme on Kangaroo Care can be provided to Mothers, which in turn will improve the preterm and low birth care.

A study to assess the effect of skin-to-skin contact (Kangaroo care) shortly after birth on the neurobehavioral response of the term newborn by a

randomized, control trial. Study subjects were 47 healthy mother infant pairs. Kangaroo care began at 15 to 20 minutes after delivery and lasted for one hour. Control group infants and kangaroo care infants were brought to the nursery 15 to 20 and 75 to 80 minutes after birth respectively. The result showed during an hour long observation starting at 4 hours postnatal, the kangaroo care infants slept longer, were mostly in a quiet sleep state, exhibited more flexor movements and postures and showed less extensor movements

The above mentioned studies show that Kangaroo care has many advantages over the conventional incubator care and it improves the health of the preterm newborn. This care is a cheapest method and can be given even for the babies from below poverty line.

It was identified by the investigator during her clinical experience that a number of low birth weight and preterm babies die within neonatal period due to the complications of low birth weight and preterm .Most of the mothers of low birth weight and preterm babies are ignorant on Kangaroo Mother Care. Hence the Investigator personally felt that by educating the mothers of these babies, the mortality rates of low birth weight and preterm babies will drastically decrease. This inspired the investigator to select this dissertation.

Statement of the problem:

A Study to Assess the Effectiveness of Kangaroo Mother care on Preterm babies Physiological ,Behavioral and Psychosocial Outcomes in a selected Pediatric Hospital, Kanyakumari.

Objectives of the study :

1. To assess the effectiveness physiological, behavioral and psychosocial outcome among experimental and control group.
2. To Assess the effectiveness of Kangaroo mother care by using Kangaroo Mother care assessment flow sheet (KMCAFS) experimental and control group.
3. To find out the association between Mothers' Characteristics and their preterm babies' Attachment in the experimental Group.
4. To find out the Association between Mothers' Characteristics and their Satisfaction in the experimental Group.

Operational definitions

Effectiveness : It refers to the output of KMC on preterm babies in terms of physiological, behavioral and psychological responses.

Kangaroo Mother care:-

A universally available and biologically sound method of care for all newborns, but in particular for preterm babies, with three components--skin

to skin contact, exclusive breastfeeding and support to the mother infant dyad.

Preterm babies :

Refer to live new baby born before 37 completed week of pregnancy

Physiological Parameters :-

Physiological parameters are the limits or boundaries in accord with the normal functioning of a living organism.

In this study it refers to the thermoregulation, weight gain, heart rate and respiration of neonates with preterm babies.

Behavioral outcome :-

It refers to a state or condition that a person behaves.

In this study it refers to the cry, feeding type, response to sound and sleep of preterm babies.

Cry is related to the number of times the neonates with low birth weight cries during the care.

Sleep is related to the time period the preterm babies sleeps during the care.

Psychosocial outcome

It refers to the mother infant attachment, mother's satisfaction and mother's perception on kangaroo mother care.

Hypothesis:

H1: There will be a significant difference between mean post test physiological, behavioral and psychosocial outcome score and mean pre test physiological, behavioral and psychosocial outcome score among experimental and control group.

H2: There will be a significant association between psychosocial outcome scores and selected demographic variables of preterm baby among experimental group.

Assumption:

1. Most of the pre mature infants have physiological, behavioral and psychosocial problem.
2. Kangaroo mother care improves the physiological, behavioral and psychosocial outcome of preterm babies.

Delimitation :

The study was delimited to pre term and their mothers admitted in NICU, Agasthiar Muni Hospital, Vellamadam, Nagercoil and Arul mission hospital.

Project outcome :

KMC will help the preterm infant in improving the physiological behavioral and psychosocial aspects of health.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with review of literature which help to gain and insight in to various aspect of the problem under study such as design, method , measures and technique of data collection that may prove useful in the proposed study.

A literature review helps to lay the foundation for the study and can also inspire new research ideas. A literature review early in the report provides the readers with a back ground for understanding current knowledge on topic and illuminates the significance of the new study.

In the process of carrying out the present study the investigator has reviewed the following literature which has been categorized under the following headings.

1.Literature related to preterm infants and kangaroo mother care:

2.Literature related to effect of kangaroo mother care on physiological outcome psychosocial and behavioral of preterm infants.

3.Literature related to Attitudes, perceptions and experiences of KMC

4.Literature related to knowledge and attitude of mothers and nurses:

Literature related to preterm infants and kangaroo mother care:

Narendar dawani (2012) conducted an experimental study regarding kangaroo care on 30 preterm infants growth and maternal attachment and postpartum depression in south Korea. The study was conducted to investigate the effect of kangaroo care on both pre mature infants and their mothers. The section of 60 minute kmc for 3weeks were practiced at a level of 111rd NICU at E university hospital. Infants body weight height and head circumference, maternal attachment and depression were measured. Study revealed that premature infants in kangaroo care showed higher in the height and bigger in head circumference than infants in control. Maternal attachment sores were higher among kangaroo care infants. The result supported the beneficial effect of kangaroo care on premature infants and their mothers.

Beltra – Valladares (2011) conducted a cross sectional study regarding the kangaroo mother care has been the intervention for preterm infants. A randomize control trial [RCT] was done to test the hypothesis that KC infants would have higher than tympanic temperatures, less weight loss and optimal behavioral states and k=lower acuity [length of stay]. Thirty four eligible infant mother dyads were randomly assigned to the KC or the control group can be computerized minimization on the day following birth. Stratification variables includes infant gender, birth weight delivery method and parity. KC infants compared to control infants had higher mean tympanic temperatures [37.3 degree C vs 37.0 degrees C], MORE QUIET SLEEP [

62% VS 22%], less crying [2% vs 6%] all at p = .000. no significant difference was found for weight loss and acuity [length of stay] these findings can be used for evidence based nursing practice in Taiwan. With the knowledge attained from this RCT nurses can educate and motivate mothers to keep their stable preterm infants warm by skin to skin contact inside their clothing, thereby encouraging self regulatory feeding.

D.E. Faries souza (2009) a quasi experimental on kangaroo mother care to prevent neonatal death due to preterm birth complication at cape town, south Africa. The objective of the study was to review the evidence and estimate the effect of kangaroo mother care on neonatal mortality due to complication of preterm birth. standardized abstraction table was used and study quality assessed by adapted GRADE methodology. The study revealed that the kangaroo mother care sensationally reduces neonatal mortality amongst preterm babies in hospital and highly effective in reducing the severe morbidity particularly from infection.

Suman RP, Udani R, Nanavathi R. (2008) conducted a randomized controlled trial to compare the effect of Kangaroo Mother Care (KMC) and Conventional Methods of Care (CMC) on Growth in Low Birth Weight babies (>2000g) on 206 neonates with weight <2000g. The subjects were randomized into two groups; the intervention group (KMC-103) received Kangaroo Mother Care. The control group (CMC-103) received conventional care. Study finding revealed that KMC group babies had better average weight gain/day (KMC: 23.99g v/s CMC: 15.58g, p<0.0001). The weekly increments

in head circumferences (KMC: 0.75 cm v/s CMC: 0.49cm, $p<0.02$). A significantly higher number of babies in the CMC group suffered from hypothermia, hypoglycemia and sepsis. By this study we can conclude that Kangaroo Mother Care improves growth and reduces morbidities in low birth weight infants. And also it is simple, acceptable to mothers and can be practiced in home.

Ndiaye O, Diout A, Diousf S, Diouff NN, Cisse Bathily A, Cisse CT, et al (2006) conducted a retrospective study to evaluate the efficiency of Kangaroo Mother Care on thermoregulation and weight gain of a cohort of preterm. Based on the files of preterm baby weighing below 2000grams included after discharge to neonatal unit of Aristide Le Dantec Maternity for Kangaroo Mother Care. Efficiency was appreciated on thermic curve evolution and daily weight gain. Findings of the study revealed that mean temperature was satisfying during follow-up and was stable around 37+/- 7.6° C at discharge of program with mean daily weight gain of 33 +/- 7.6 g with one case of death. The results of this study point out efficacy of Kangaroo method on thermoregulation, weight gain and survival of preterm babies. So it can be promoted in developing countries as it is low cost and more effective

Penalva and Schwartzman (2006) conducted a retrospective study to describe the profile of preterm KMC infants in a hospital in Brazil and investigate possible correlations between these descriptive data. The retrospective design allowed the analysis of a large volume of data; however, the lack of controls in the study prevented comparison between data from KMC infants with those from a control (e.g. infants receiving conventional

care). Birth weight, gestational age and Apgar scores were all determinants of better clinical, nutritional and motor outcomes in KMC infants. The study sample considered of 70 infants, who were born April 1999 and April 2002 and who had participated in the KMC Program (a national programme run at a number of

hospitals throughout Brazil) for at least 3 days. The follow-up period of the study was one year. Exclusive breastfeeding started at a mean post conceptual age of 35.3 weeks and mean age postpartum of 18.6 days. At the time of hospital discharge, infants were at a mean age of 29 days, mean weight of 1734 g and 85.7% were breastfeeding exclusively, which was maintained up to 6 months of age in 60.3% of infants.

Literature related to effect of kangaroo mother care on physiological outcome psychosocial and behavioural outcome of preterm infants.

Goyal A. (2013) conducted Quasi experimental study to evaluate the efficiency of kangaroo mother care in thermo regulation and weight gain of a cohort of preterm. Based on the Files of 40 preterm babies weighing below 2000g included after discharge of neonatal unit of Aristide le Dantee maternity foe KMC .efficiency was appreciated on thermic curve evaluation and daily weight gain. Findings of the study revealed that mean temperature was satisfied during follow up and was stable around 37+/-7.6degree C at discharge of program with mean daily weight gain of 33+/-7.6g with one case of death. The result of this study point out efficiency of kangaroo mother care

method on thermoregulation., weight gain and survival of preterm infants. So it can be promoted in developing countries as it is low cost and more effective.

Ferroz c mdjeed(2012) conducted a randomized control trial to compare the effect of Kangaroo Mother Care (KMC) and Conventional Methods of Care (CMC) on growth in low birth weight babies. The subjects were 206 neonates with birth weight less than 2000 grams. The findings of the study revealed that the KMC babies had better average weight gain per day (KMC: 23.99g Vs CMC: 15.58g, $P<0.0001$). The weekly increment in the head circumference (KMC: 0.75cm Vs CMC: 0.49cm, $P=0.02$) and length (KMC: 0.99cm VS CMC: 0.7cm, $P=0.0008$) were higher in the KMC group. Therefore, the study revealed that babies under kangaroo care were started earlier on breast feeds (98% Vs 76%). The study concluded that KMC is a simple and acceptable method for the mother can be continued at home and thereby improves the infant growth and reduces morbidity.

Terry Lee (2012)conducted an experimental study to find out the various beneficial effects of kangaroo mother care in preterm babies with low birth weight . The sample size was 50 low birth weight infants, weighing less than 2000 grams. The mean birth weight was 1.487-0.175 kg. The mean age at discharge was 23.6-3.52 days and mean duration of hospital stay was 15.5-11.3 days. The study concluded that KMC is effective than traditional care with incubators is safe on stable preterm infants. KMC because of its simplicity would be preferred in home care of low birth weight babies.

Urani j. jo (2012) conducted a randomized control trial to evaluate the effect of Kangaroo Care (KC), used shortly after delivery, on the neurobehavioral responses of the healthy newborn. The subjects included were 47 healthy mother-infant pairs. KC began at 15 to 20 minutes after delivery and lasted for one hour. Control infants and KC infants were brought to the nursery 15 to 20 and 75 to 80 minutes after birth, respectively. During a one hour long observation, starting at 4 hours postnatal, the KC infants slept longer, were mostly in a quiet sleep state, exhibited more flexor movements and postures and showed less extensor movements. KC seems to influence state organization and motor system modulation of the newborn infant shortly after delivery. The significance of our findings for supportive transition from the womb to the extra uterine environment is discussed. Medical and nursing staff may be well advised to provide this care shortly after birth.

Mbazor oj Umeora (2011) conducted an experimental study to compare the effectiveness of using early Kangaroo care for extra uterine temperature adaptation against that of using radiant warmers. Trial subjects included 78 consecutive cesarean newborn infants with hypothermia problems. The Kangaroo care group received skin-to-skin contact with their mothers in the post-operative room. While infants in the control group received routine care under radiant warmers. The mean temperature of the Kangaroo care group was slightly higher than that of the control group (36.29 degrees C vs. 36.22 degrees C, p=0.044). After four hours, 97.43% of kangaroo care group infants had reached normal body temperatures, compared with 82.05% in the radian warmer group. Results demonstrated the positive

effects of kangaroo care for extra uterine temperature adaptation in hypothermia infants. In the course of evidence-based practice, kangaroo care could be incorporated into the standard care regimen of low birth weight infants in order to improve hypothermia care against that of using radiant warmers.

Kazuhiko (2010) conducted an experimental study to evaluate the efficacy of Kangaroo method on thermoregulation and weight gain of a cohort of preterm. It covers 56 preterm babies. The mean gestational age was 33+/-, 6 weeks and mean birth weight was, 1488+/-277,6g (median=1500g). Mean temperature was satisfactory during follow up and was stable around 37+/-, 5 degrees C at discharge of program with mean daily weight gain of 33+/-7,6g. The results of this study pointed out the efficacy of kangaroo method on thermoregulation, weight gain and survival of preterm babies. Thus the group advocates Kangaroo care for developing countries because of its low cost.

Suman pp, udani R, nanavathi R (2010) conducted an experimental study to assess the effect of kangaroo mother care [KMC] and conventional methods of care[CMC] on growth in low birth weight babies[> 2000g] on 206 neonate with weight <2000g. the subject were randomized in to two groups. The intervention group [KMC -103] received kangaroo mother care. The control group[CMC-103] received conventional care. Study findings revealed that KMC group babies had better average weight gain day [KMC: 23.99G v/s CMC: 15.58g , p<0.0001]. the weekly increments in head circumference [KMC:0.75cm v/s CMC: 0.49 cm, p<0.02]. a significantly higher number of babies in the CMC group suffered from hypothermia , hypoglycemia and

sepsis. By this study we can conclude that kangaroo mother care improves growth and reduces morbidities in low birth weight infants. And also it is simple acceptable to mothers and can be practiced in home.

Literature related to Attitudes, perceptions and experiences of KMC

Parmar et al. (2009) described an observational study conducted to assess the acceptability of KMC to mothers, family members and healthcare workers (no definition of acceptability was provided). Infants (n=135) with mean birth weight 1460 g received KMC from the mother (n=60), father (n=40), mother-in-law (n=32) or close relative (n=21). KMC providers were interviewed using a pre-specified questionnaire containing 15 questions (questions listed in the paper) and using a Likert scale. Data were stratified into two subgroups (mother or other provider) for analysis. Almost all (96%) mothers reported that they understood the method KMC very well, although 12% stated that required an additional training session. Although half of mothers were initially apprehensive about KMC, almost all (98%) were able to maintain their baby in the KMC position and felt it to be comfortable and less stressful than being57 separated from their baby. In total, 96% of mothers reported improved confidence and mood with KMC; 94% felt they were making a positive contribution to the care of their baby; and 98%

felt empowered to continue with KMC at home. The negative aspects of KMC reported by mothers were that it interfered with routine daily activities such as bathing (18%), and a lack of privacy (6%). High proportions of other KMC providers supported KMC (husbands, 82.5%; mother-in-laws, 84%; other family members, 81%).

Sivapriya S, Subash J, Kamala S. (2008) conducted a quasi experimental study to assess the knowledge of mothers of preterm babies regarding kangaroo mother care and to evaluate the effectiveness of structured teaching programme on kangaroo care among the mothers of preterm babies. A total of 35 mothers were selected for the study. Findings of the study revealed that, the pre-test knowledge of the Kangaroo Care was Nil. After the structured teaching programme post test knowledge of the mother regarding Kangaroo Care was increased. 6 (17.10%) mothers had inadequate knowledge on Kangaroo Care, 25 (71.4%) mothers had moderately adequate knowledge and 4 (11.5%) mothers had adequate knowledge on Kangaroo Care. Kangaroo Mother Care is a simple low cost and highly effective intervention for low birth weight babies. And also teaching programmes can improve the knowledge of mothers on Kangaroo Care. So, educational programme on Kangaroo Care can be provided to Mothers, which in turn will improve the preterm and low birth care.

Johnson (2007) studied a naturalistic inquiry to describe the maternal experience of kangaroo holding premature infants in the neonatal intensive care unit. This study setting (a Level III tertiary care neonatal intensive care unit) and sample (mothers of preterm KMC infants) were both appropriate to

address the research question. The study design employed open-ended, transcribed audio taped face-to-face interviews. Individual interviews eliminate the possibility of the participant being influenced by others (as could be the case with group interviews), while the use of open-ended rather than closed questions encourages full and meaningful answers.

Nirmala et al. (2006) conducted a repeated measure design study to assess perceptionsof KMC among mothers and healthcare workers. This study included a purposivesample of 50 neonates with birth weight in the range 1070-2460 g. Perceptions of KMCwere assessed in a sample of 45 mothers over a 6-week period (attrition rate = 8%) and33 healthcare workers. A guide was used for interviews with mothers that had been previously validated by nine experts, but this is not provided in the paper and anoverview of the questions was not given. No information is provided on interviewer or their relationship with the study participants.All mothers felt that KMC improvbonding and made them feel good, satisfied and happy to be contributing to the care of their baby; 86.7% found no problems providing KMC to their baby and 30% believed it had increased their milk production Nevertheless, 88% stated their intention to continue with KMC at home.

Kadam S, Binay S, Kanbur W, Mondkar JA, Fernandez A. (2005) conducted randomized controlled trial to determine the feasibility and acceptability of Kangaroo Care in a tertiary care hospital in India. Over one year period in which 89 neonates were randomized into two groups Kangaroo

Mother Care (KMC) and Conventional Method of Care (CMC) group. 45 babies were randomized into KMC group and 45 to CMC group. Findings of study revealed that 70% of mothers felt comfortable during the Kangaroo Mother Care. 73% felt they would able to give Kangaroo Mother Care. Kangaroo Mother Care is a easy and powerful way to improve the attachment between Mother and her low birth weight baby. It also plays a very important role in reducing the incidences of hypothermia in low birth weight babies

Kadam et al. (2001) reported the findings of RCT conducted over 1 year to assess theacceptability of KMC to mothers and fathers (no definition of KMC was provided).Neonates with birth weight <1800 g (n=89) were randomised to receive either KMC(provided by the mother) or conventional care (managed under radiant warmers).Interviews with mothers were conducted using semi-structured questionnaires which asked four questions: (1) “Do you feel comfortable when giving KMC care”; (2) “Will you continue giving kangaroo care at home?”; (3) Does your husband agree with this care?”; (4) “Did you feel your baby should have received care under radiant warmer?”.Findings from the interviews revealed that 86% of mothers were happy with KMC,while 14% felt the conventional method of care to be better than KMC; 79% of mothers56 were comfortable with KMC and 73% stated their intention to continue with KMC at home. In total, 64% of fathers agreed with this method of care. It is not clear whether all mothers invited to participate agreed.

Literature related to knowledge and attitude of mothers and nurses:

Thavan T. (2012) Conducted an experimental study to determine the feasibility and acceptability of kangaroo mother care in a tertiary care hospital in India. Over one year period in which 89 members were randomized in to two group. Kmc group and conventional method of care CMC group. 45 babies were randomized in to KMC group. And 45 babies to CMC group. Findings revealed that 70% of mothers felt comfortable during kangaroo mother care.73% felt that they would able to give kangaroo mother care. KMC is easy and powerful way to improve the attachment between mother and preterm babies. It also plays a very important role in reducing the incidence of hypothermia in preterm infants.

R. Mahejaven (2011) conducted an experimental study to assess the knowledge of mothers of preterm babies regarding kangaroo mother care and to evaluate the effectiveness of structured teaching program on kangaroo care among the mothers of pre term babies. A total of 35 mothers were selected for the study , findings of the study revealed that the pre test knowledge of mothers regarding kangaroo mother care was increased. 6(17.10%) mothers had inadequate knowledge on kangaroo mother care had moderate adequate knowledge and 4(11.5%) mothers had adequate knowledge on kangaroo care. KMC Is a simple low cost and highly effective intervention for preterm babies. And also teaching program can improve the knowledge of mothers on

kangaroo care. So educational care can be provided to mothers which in turn will improve the preterm and low birth care.

STEVE (2011) Conducted an experimental study to assess the knowledge and attitude of nurses towards kangaroo mother care on preterm infants in NICU. All neonates once stable are provided with KMC for a minimum period of 4 hours /24 hours which was continued till discharge. 62 preterm babies with low birth weight were given KMC. Of these19(32%)were <1000gm, 32(52%)1001-1500gms and rest between 1501and 2500gms. Findings of the study revealed that temperature remained within first week is 50% and by second week 23.4% . nurses felt that the requirement of manpower , close supervision by them and the use of heat convectors in NICU decreased considerably. Babies who received KMC had fewer complication and their survival outcome has better. An increased in expressed breast milk in mothers was reported. Mothers accepted KMC well were more confident in handling the pre term infants. Their milk yield increased and they felt that they were contributing positively in the care of their tiny babies.

Ray K.(2010) conducted an experimental study to evaluate the barriers and knowledge of health professionals regarding this care in 2 level neo natal care units . studies was conducted by means of 2 questionnaires , one intended to physicians the other to nursing staff sharing some common questions . study result revealed that 80% of the physician and 71.4% of nursing staff answered to the questionnaires. The difficulties were linked technical constraints. Responses were not very difficult between the two

teams. The majority considered this practice as a fully fledged care. The positive effects on attachments were well known but those on sleep breast feeding were rarely mentioned. Barriers to implementation were centered on infants safety. The majority of the team wished to benefit from an educational intervention.

Mallet I, Bomy H, Govaert N, Gouda I, Brasme C, Dubois A, et al (2007) conducted a study to evaluate the barriers, knowledge and expectations of health professionals regarding this care in 2 level III neonatal care units in the Nord-Pas-de-Calais. Study was conducted by means of 2 questionnaires, one intended to physicians, the other to the nursing staff sharing some common questions. Study results revealed that 80% of the physicians and 71.4% of the paramedical staff answered to the questionnaires. The difficulties were linked to technical or architectural constraints. Responses were not very different between the 2 teams. The majority (90%) considered this practice as a fully-fledged care. The positive effects on attachment (96% of the answers) were well-known but those on sleep (2, 9%), breast-feeding (5%) and pain (0%) were only rarely mentioned. Barriers to implementation were centred on infant's safety. The majority of the team wished to benefit from an educational intervention.

Kaur R, NArula S, Parmar V, Kumar A, Basu S, Kavita R, et al (2004) conducted a study to assess the feasibility and attitude of nurses towards Kangaroo Mother Care (KMC) in low birth weight neonates in an Intensive Care Unit. All neonates once stable are provided KMC for a

minimum period of 4 hours/24 hours, which was continued till discharge. Sixty two low birth weight babies were given KMC. Of these19 (31%) were <1000 gm, 32(52%) 1001-1500gms and rest between 1501 and 2500 gms. (Smallest 548 grams). KMC was initiated within first week in 50 % and by 2nd week in 27.4%. Findings of the study revealed that Temperature remained within 36.5°C to 37.4°C even in VLBW babies under incubator care. Nurses felt that the requirement of manpower, close supervision by them and use of heat convectors in NICU decreased considerably. Babies who received KMC had fewer complications and their survival outcome was better. An increase in expressed breast milk in mothers was reported. Mothers accepted KMC well, were more confident in handling their LBW babies. Their milk yield increased and they felt that they are contributing positively in the care of their tiny babies .

Engler et al. (2002) conducted a descriptive survey to investigate nurses' clinical practices and knowledge, barriers, and perceptions of KMC. A non-validated questionnaire was sent to 1,133 nurse managers in all hospitals known to provide neonatal intensive care services in the United States requesting that this be completed by the nurse most familiar with KMC. The response rate was 59%. In total, 82% reported practicing KMC and nurses were generally knowledgeable about this method of care. Overall, those nurses in NICUs where KMC was practiced held more positive perceptions of KMC than those who did not practices KMC. The major barriers to implementing KMC were identified as safety concerns and reluctance among other healthcare workers, mothers or other family members to participate in KMC. Misperceptions regarding KMC were evident, with 40% of nurses

believing that low gestational age or low birth weight were contraindications to KMC.

Ramanathan et al. (2001) report the findings of an RCT conducted to assess the acceptability of KMC to mothers and nurses. Acceptability was defined as "the positive attitude of mothers and nurses towards KMC". Twenty-eight infants with birth weight <1500 g were randomized to receive either KMC from the mother or standard care (incubator or open care system). Mothers' attitudes to KMC were assessed using a 10-item questionnaire incorporating a Likert scale (provided in the paper) on days 3 and 7. Acceptability data from only 10 mothers are included in the paper and it is not clear whether the other 4 mothers refused to participate in the interviews or were not invited. At day 7, all 10 mothers were happy with KMC, felt confident handling their baby, and felt that KMC brought them closer to their baby, while 90% reported feeling comfortable with KMC. In total, 80% stated their intention to continue with KMC at home. However, 40% of mothers felt that KMC interfered with daily activities whilst 60% were unsure.

CONCEPTUAL FRAMEWORK

THEORY APPLICATION

ROY'S ADAPTATION MODEL

Conceptual frame work is defined as a theoretical approach to the study of the problems that are scientifically based, which emphasizes the selection arrangements and classification of its concept.

A conceptual model gives a clear picture for logical thinking for systematic observation and interpreting the observed data. The model also gives direction for relevant question on phenomenon and point out solution to practical problems.

A conceptual model frame work deals with the concepts of the research problem assembled together that provide a certain frame of reference. The frame work helps and guides the researcher to gain insight into the problems by explaining the relationship between the facts .

One of the important purposes of theoretical framework is to communicate clearly the relationship of various concepts . Theoretical framework of reference for clinical practice, research and education.

The theoretical frame work for the present study is developed from roy's adaptation model and is directed towards the increasing

level of coping and adaptive wellbeing and actualizing the health potentials of all the individuals.

In the present study the concept of Roy's adaptation model utilized, Kangaroo mother care as agent of the adaptive behaviours of preterm babies Determinants of adaptive behavior organized into focal stimuli, contextual stimuli and residual stimuli cognitive-perceptual factors, modifying factors participation and the likelihood of being engaged in health promoting behavior which depends on cues of action, such KMC.

RAM is one of the widely applied nursing models in nursing practice, education and research.

Nursing is the science and practice that expands adaptive abilities and enhances person and environment transformation

Nursing goals are to promote adaptation for individuals and groups in the four adaptive modes, thus contributing to health, quality of life, and dying with dignity

This is done by assessing behavior and factors that influence adaptive abilities and by intervening to expand those abilities and to enhance environmental interactions.

Stimuli: Stimuli are classified as: Focal- those most immediately confronting the person, Contextual-all other stimuli present that are affecting the situation .

Residual- those stimuli whose effect on the situation are unclear.

Focal: Prematurity of baby .Contextual: KMC, Residual: Physiological & behavioral changes.

Adaptive response **:**Weight gain .Good feeding. Quite sleep. No cry and all the behaviors are normal. Coping is achieved.

Cues to action:- Further the investigation has planned and developed videos and demonstration(KMC) on kangaroo mother care which has a cue to action, which in turn will help in the promotion of health in preterm babies .

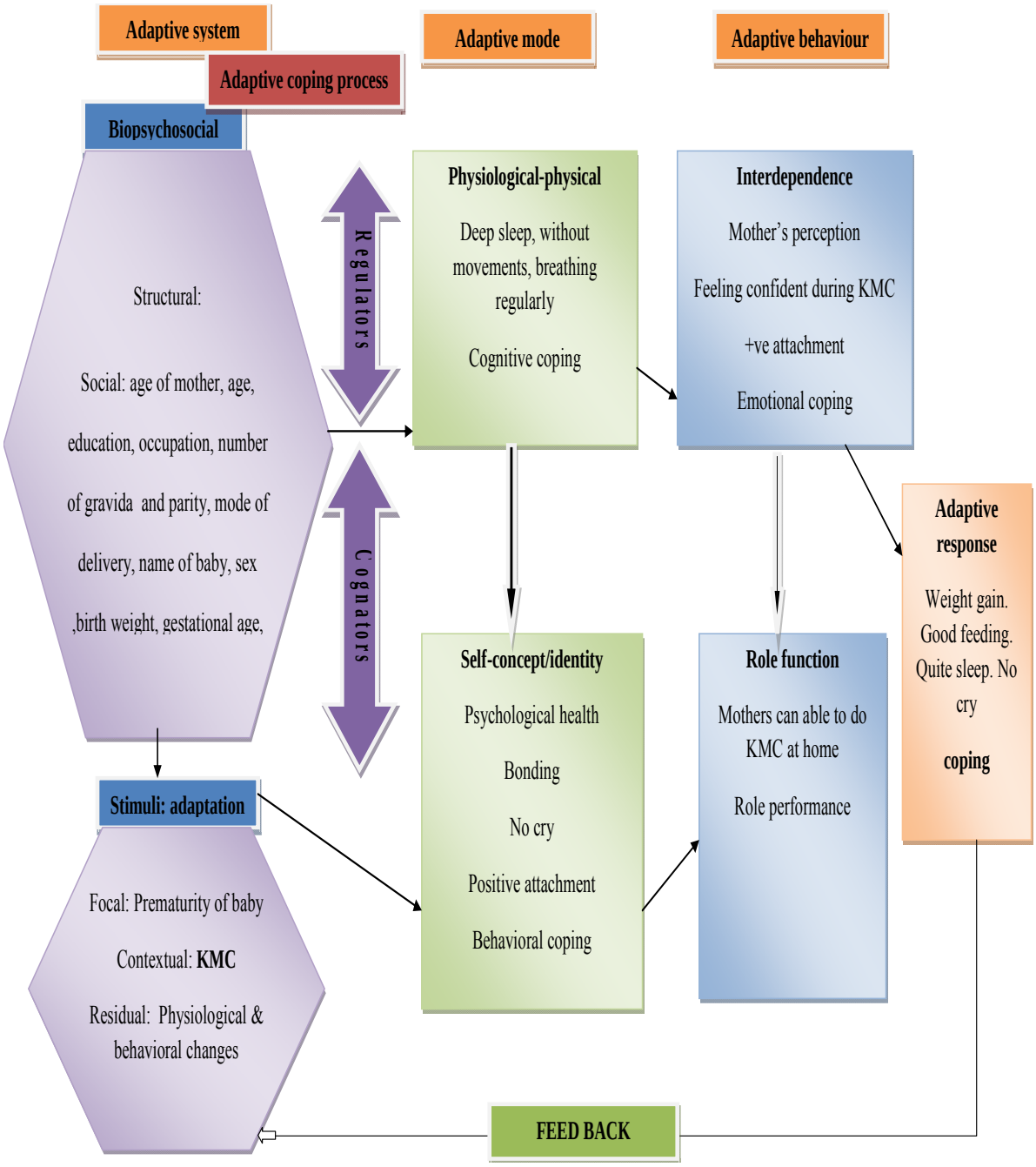

Figure 1 Conceptual Frame work based on Roys adaptation model.

CHAPTER III

RESEARCH METHODOLOGY

This chapter deals with the methodological approach adapted for the experimental it includes description of research approach, research design, Variables, Setting of the experimental, Population and sample criteria sampling technique, Descriptions of the tool, Scoring procedure content validity of the tool, Pilot experimental, Data collection procedures, Plan for the data analysis.

According to polit and Hungler research methodology refers to the research ways of obtaining, Organizing and analyzing data.

Research Approach :

Research approach is the most significant part of any research. The appropriate choice of the research approach depends upon the purpose of the research experimental which has been undertaken in order to accomplish the main objectives of the experimental.

An experimental research approach, a sub type of quantitative approach is used to determine the effectiveness of kangaroo mother care on physiological, behavioral and psychosocial outcomes among preterm babies.

Research Design:

Research design refers to the researcher overall plan for organization, scientific investigation, it helps the researcher in the selection of subject, manipulation of independent variable and observation of a type of statistical method to be used to interpret data.

The selection of design depends upon the purpose of the experimental, research approach and variables to be studied. The research design used for the present is quasi- experimental pre test and post test design with control group.

Symbolic Representation Of quasi experimental design

Group	Pre Test	Nursing intervention	Post test
Experimental	O_1	x	O_2
Control	O_1	-	O_2

O_1 – Pre test, Physiological, Behavioral and psychosocial out come

X- (Intervention) Kangaroo mother care

O_2 – Post test, Physiological, Behavioral and psychosocial out come

Variables

A variable is measurable or potentially components of an object or event that may be different from quality and quantity from a one individual ,object or event to another individual object or event to same general class.

Independent variable

The independent variable is a stimulus or activity that is manipulated or varied by the researcher to create an effect on the dependent variable.

In this present experimental independent variable is kangaroo mother care

Dependent variable

A dependent variable is response behavior or outcome. the researcher wants to predict or explain. In this present experimental dependent variable is physiological, behavioral and psychosocial outcome among preterm babies.

Demographic variables

Characteristics of preterm babies and their mothers demographic data such as age of mother, age, education, occupation, number of parity, mode of delivery, sex ,birth weight, gestational age, chronological age, APGAR score.

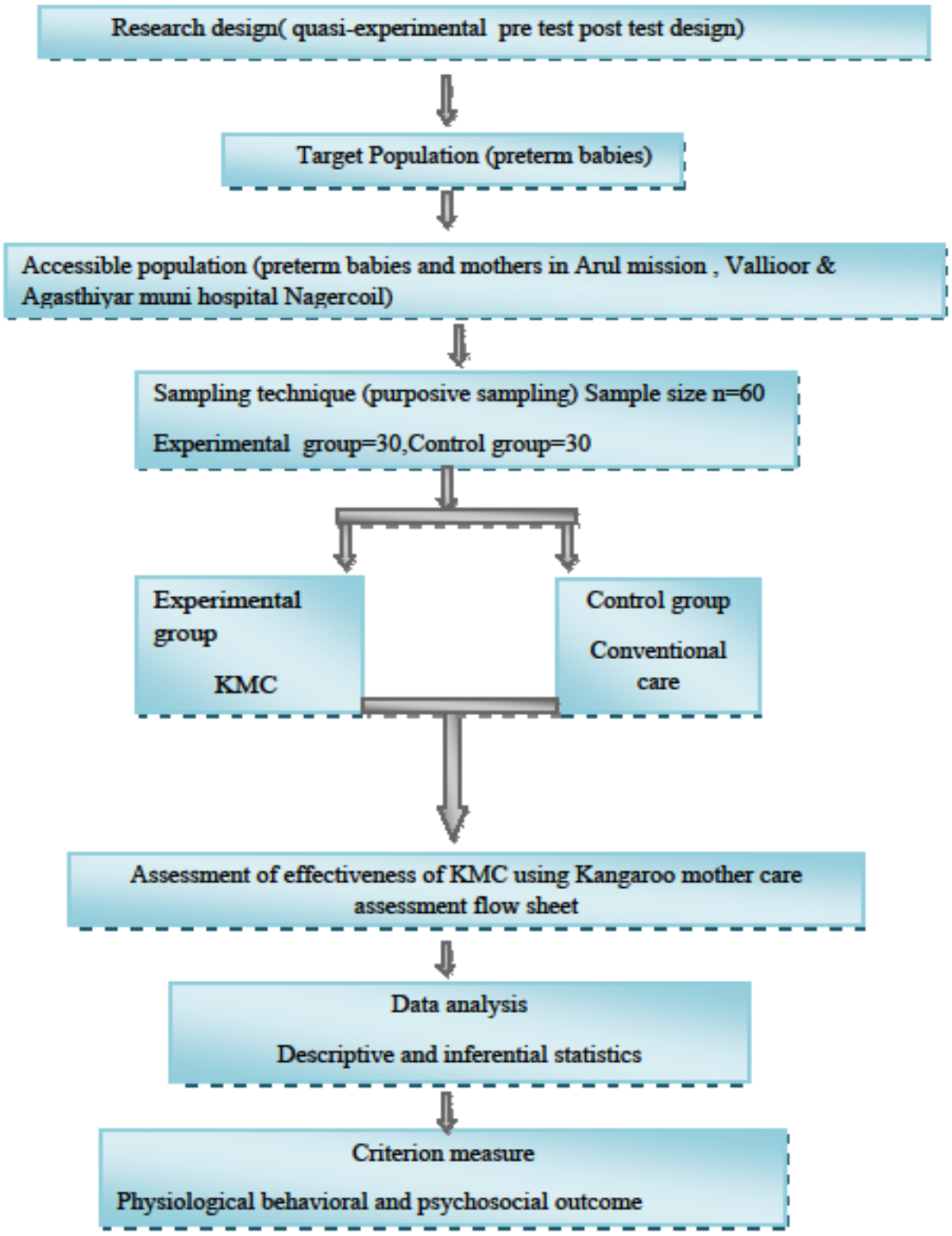

Figure 2 Schematic Representation on Research Methodology

Setting of the study

Polit and Hungler (2001) Physical location and condition in which data collection has taken place is the setting of the study.

The study was conducted in Agasthiyar muni hospital, vellamadam, nagercoil, k.k dist,which is a 150 bedded hospital,and NICU has 6 beds and Arul mission hospital, vallioor which Is 150 bedded with 4 bed in NICU.

Population

According to Polit & Hungler (2005) Population refers to the totality or aggregate of all individuals with the specified characteristics.

In the present experimental, the accessible population was preterm babies and the who are stable in NICU, Agasthiyar muni hospital, vellamadam, Kanyakumari and Arul mission hospital, Vallioor.

Sample

Polit & Hungler defines sample as the subset of the population selected to participate in the research.

The sample selected for the present study is 30 stable preterm babies in NICU, Agasthiyar muni hospital and 30 in NICU, Arul mission hospital vallioor.

Sampling criteria

The following were the inclusive and exclusive criteria for selection of the sample

Inclusion criteria for sampling

- All Stable premature infants as medically classified and both gender.
- Premature babies having mothers

Exclusion criteria

- High risk preterm babies
- Preterm babies with infection
- Severe respiratory distress
- Ventilated preterm babies
- Preterm babies on oxygen therapy
- Preterm babies with congenital anomalies.

Sampling Technique

Polit and Hungler (2001) state that the process of selecting a portion of population is to represent the entire population.

The samples for this study were selected by adopting non-probability purposive sampling technique. The investigator has chosen the sample by using the Inclusion and Exclusion criteria and identified 30 preterm babies admitted in Agasthiyar muni hospital NICU and 30 preterm babies admitted in Arul mission hospital NICU.

Description of tool:

After an extensive review of literature and discussion with the experts the Kangaroo mother care assessment flow sheet to assess the physiological behavioral and psychosocial outcome of preterm babies was developed

Components of tool

Part I:

Kangaroo Mother Care Assessment Flow Sheet (KMCAFS):

It consist of demographic data of preterm babies and their mothers. Demographic variables Data were collected through the following tools.

It was used to evaluate the effect of Kangaroo mother Care (KMC)on physiological, behavioral and psychosocial of premature infants outcomes. The necessary modifications were done by the researcher to suit the nature of the current experimental. It covered the following:

a. Characteristics of preterm babies, as regards their birth weight, gestational age, chronological age, and weight gain at discharge. These data were obtained from the preterm babies' medical record during hospitalization.

b. Characteristics of mothers, it includes: Age, level of education and employment, obstetrical history such as; type of delivery, and parity.

c. Effect of Kangaroo Mother Care on premature infants' physiological outcomes; It includes observation of: Preterm babies' heart rate, respiratory rate, body temperature, and weight gain at discharge (physiological outcomes).Preterm babies' feeding type, crying and sleeping condition and response to sound (behavioral outcomes). Maternal- preterm babies' attachment (Psychosocial outcomes).

d. Mothers' satisfaction and perception regarding Kangaroo Mother Care.

Questions were in the form of open and closed ended questions.

The time consumed with each mother for application of kangaroo care and to fill the Flow Sheet by the researchers for each mother with her preterm babies in experimental and control groups was 2-3 hours. Each KMCAFS was filled by the researchers' observation on spot individually and the average number of preterm babies and their mothers who interviewed and observed per week was 4-5 for both experimental and control. Each preterm babies was assessed pre & post KMC, for physiological Outcome.

Content validity

According to Nancy Burns (2005) “Validity is the determination of the extent to which an instrument reflects the abstract construct being examined.

Content validity was done from 11/05/2015 to 16/05/2015 Content validity of the tool was obtained on the basis of opinion from 6 experts

comprising of 5 nursing experts, and one pediatrician .Minor modifications are made on the basis of recommendations and suggestions of experts. After consulting the guide and co guide, final tool was reframed .It was found to be valid and suitable for children.

Reliability

To measure the stability of the responses from the same preterm babies and mother and is form of test retest reliability. The researchers performed two separate assessments at two different times; these two data sets from the same researchers and then compared with each other. Reliability of the tool was tested by split half method using karl Pearson's coefficient of correlation formula. The reliability computed was 0.99. Hence it was highly reliable.

Pilot Study

Polit and Beck (2004) states pilot experimental is a small version or trail run, done in preparation for a major experimental.

A pilot study was carried out on 10 % of the experimental sampling 10 preterm babies and their mothers (5 Experimental group & 5 Control group) at the previously mentioned setting to test the experimental tools for its clarity; validity and time require to fill it. The necessary modifications were done through adding or omission of unneeded or repeated criteria prior to data collection according to the pilot experimental results. The preterm babies and their mothers in the pilot experimental were excluded from the experimental sample. The pilot study was conducted from

18/05/2015 to 30/05/2015. During the pilot experimental the investigator did not find any significant problems and found that the experimental is feasible.

Data collection procedure

The study was conducted in Agasthiyar muni hospital, vellamadam, kanyakumari and Arul mission hospital, vallioor. 60 samples were selected by using purposive sampling technique who fulfilled the inclusion criteria. A prior formal permission is obtained from the higher authority of the Hospital. The data collection procedure was done from 13/07/2015 - 22/08/2015. Oral verbal consent was obtained from the parents of preterm babies. Demographic variables is collected from the parents as well as from hospital unit records. KMCAFS was Used to assess the preterm infant's physiological behavioral and psychosocial outcome. On the same day itself Kangaroo mother care was given to the preterm babies of experimental group for 60 minutes. After seven days Post-test will be conducted with same KMCAFS among the same group of Preterm babies.

PROCEDURE

A. Procedures for both groups (experimental and control groups):

Assessing the preterm babies' vital signs (Temperature, heart rate, respiratory rate.,) , feeding, crying and sleeping condition of preterm babies'.

Assessing the mother- preterm babies attachment.

Assessing the mothers' satisfaction with their preterm babies.

B. Procedures for KMC (Experimental group):

Kangaroo Mother Care was performed only after the mothers were fully informed about the nature and purpose of KMC and when the mothers' verbal agreement was obtained.

The nature, aim, benefits and effect of the experimental were explained by the researchers to all mothers included in the study.

Giving the mother KMC booklet that was prepared by the researcher.

The researchers then prepared both the mother and the preterm babies through:

Wrapping the preterm babies in a blanket and giving for the mother.

The preterm babies was transferred from the incubator into KMC after routine incubator care was completed.

KMC was carried out with the mother through holding the preterm babies prone, clothed only in a diaper, skin-to-skin, between the mother's breast.

All preterm babies were held upright at a 30 –40 degree angle. The preterm babies back was covered with a receiving blanket folded in fourths and placed beneath the mother's cover gown to insure preterm babies' temperatures were sustained within a neutral thermal zone.

Mother and the preterm babies were sited on a chair in the feeding room.

Mother was encouraged to rest during KMC, and breast feed the preterm babies.

Assessing the premature infants' feeding during KMC for type of feeding.

Assessing the mother-premature infants' interaction.

Mother and preterm babies had 60 minutes of undisturbed KMC.

Returning the preterm babies to the incubator.

Assessing the premature infant's vital signs(Temp., H.R., and R.R.,).

Assessing the premature infant's crying and sleeping condition.

At the end, assessing the mothers' perceptions and suggestions regarding KMC.

C. Procedures for Conventional or routine incubator Care (control group):

Helping the mother to sit on a chair in the feeding room.

Wrapping the preterm babies in a blanket and giving for the mother.

Helping the mother to feed the preterm babies.

Assessing the preterm babies' type of feeding.

Assessing the mother-premature infants' interaction.

Returning the preterm babies to the incubator.

Assessing the premature infant's vital signs(Temp., H.R., and R.R.).

Assessing the premature infant's crying and sleeping condition.

At the end, the researchers thanked the mother and gave the KMC booklet as a reward from the researchers for the mother's sharing and encouraged them to practice KMC.

Plan for data analysis:

The collected data were organized, revised, tabulated and analyzed by using the SPSS Version. Descriptive statistics was used to calculate

percentages, and frequencies for the experimental and control groups.

Appropriate statistical tests as Chi- square (X^2) were used to estimate the statistical significant differences between the groups. Statistical significance consider at $p \leq 0.05$, mean while statistical insignificance consider at $p > 0.05$.

Ethical Considerations :

- Needed permission was obtained through the appropriate channels.
- The aim of the experimental was explained to all mothers.
- Mother's participation was voluntary
- Code number for each mother and preterm babies was applied to protect their confidentiality right of their personal data.

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from 60 preterm babies and their mothers who delivered preterm babies from selected hospital at Kanyakumari. The present study was to assess the effectiveness of Kangaroo mother care on preterm babies.

According to Polit and Hungler (2005),"Analysis is the method of organizing sorting and scrutinizing data in such a way that research question can be answered.

The study findings are presented in the section as follows.

Section I

Kangaroo Mother Care Assessment Flow Sheet (KMCAFS):

It consists of demographic data of preterm babies and their mothers in experimental and control group.

Section II

It consists of Preterm babies' Physiological Outcomes in experimental and control group.

Section III

It consists of Preterm babies' Behavioral Outcomes in experimental and control group.

Section IV

Preterm babies' Psychosocial Outcomes in experimental and control group.

Section V

Association between Mothers' Characteristics and their attachment with preterm babies' in the Experimental Group.

Section VI

Association between Mothers' Characteristics and their Satisfaction in the Experimental Group.

Section I

Kangaroo Mother Care Assessment Flow Sheet (KMCAFS):

Table: 1 Frequency and Percentage Distribution of Preterm babies in Both Groups According to their Characteristics. **N=60**

Preterm babies characteristics	Experimental Group		Control Group	
	n	%	n	%
1.Gender				
a)Male	13	43.3	11	36.7
b)Female	17	56.6	19	63.3
c)Transgender	0	0	0	0
2.Gestational age {weeks}				
a) less than32	4	13.3	14	46.7
b)32 to less than 34	11	36.7	8	26.6
c)34 to less than36	15	50.0	8	26.6
3.Birth weight{grams}				
a)less than 1500	5	16.7	7	23.3
b)1500 to less than 2500	4	13.3	13	43.3
c)2000 to less than2500	21	70.0	10	36.7
4.Length of hospital stay {days}				
a)less than 3	5	16.7	5	16.7

b)3to less than6	11	36.6	6	20.0
c)6 to less than 9	9	30.0	8	26.6
d)greater than 10	5	16.7	11	36.7
5.APGAR score				
a)7 and above	9	30.0	17	56.7
b)4 to 6	20	66.7	13	43.3
c)below 3	1	3.33	0	0

Table (1) reveals the Frequency and Percentage Distribution of Preterm babies in Both Groups according to their Characteristics.

Regarding gender, 13(43.3%) are male 17(56.6%) are female and no transgender in experimental group, and 11(36.6%) are male 19(63.3%) are female and no transgender in control group.

Regarding gestational weeks, 3(10%) are less than32, 11(36.6%) are 32 to less than 34 weeks and 15(50) are 34 to less than 36 in experimental group, and 14(46.6%) are less than 32, 8(26.6%) , 32 to less than 34 weeks and 8(26.6%) are 34 to less than 36 in control group.

Regarding birth weight, 5(16.5%) are less than 1500, 4(13.3%) are 1500 to less than 2500 grams and 21(70%) are 2000 to less than 2500 in experimental group, 7(23.3%) are less than 1500, 13(43.3%) are 1500 to less than 2500 grams and 10(36.6%) are 2000 to less than 2500 in control group

Regarding Length of hospital stay {days}, 5(16.6%) are less than 3 ,11(36.6%)are 3 to less than 6 , 9(30%) are 6 to less than 9 and 5(16.6%) are

greater than 10 in experimental group , 5(16.6%) are less than 3 ,6(20%) are 3 to less than 6 ,8(26.6%) are 6 to less than 9, 11(36.6%) are greater than 10 in control group.

Regarding APGAR score, 9(30%) are 7 and above, 20(66.6%) are 4 to 6, 1(3.33%) are below 3 in experimental group and 17(56.6%) are 7 and above, 13 (43.3%) are 4 to 6, 0(0%) are above 3 in control group.

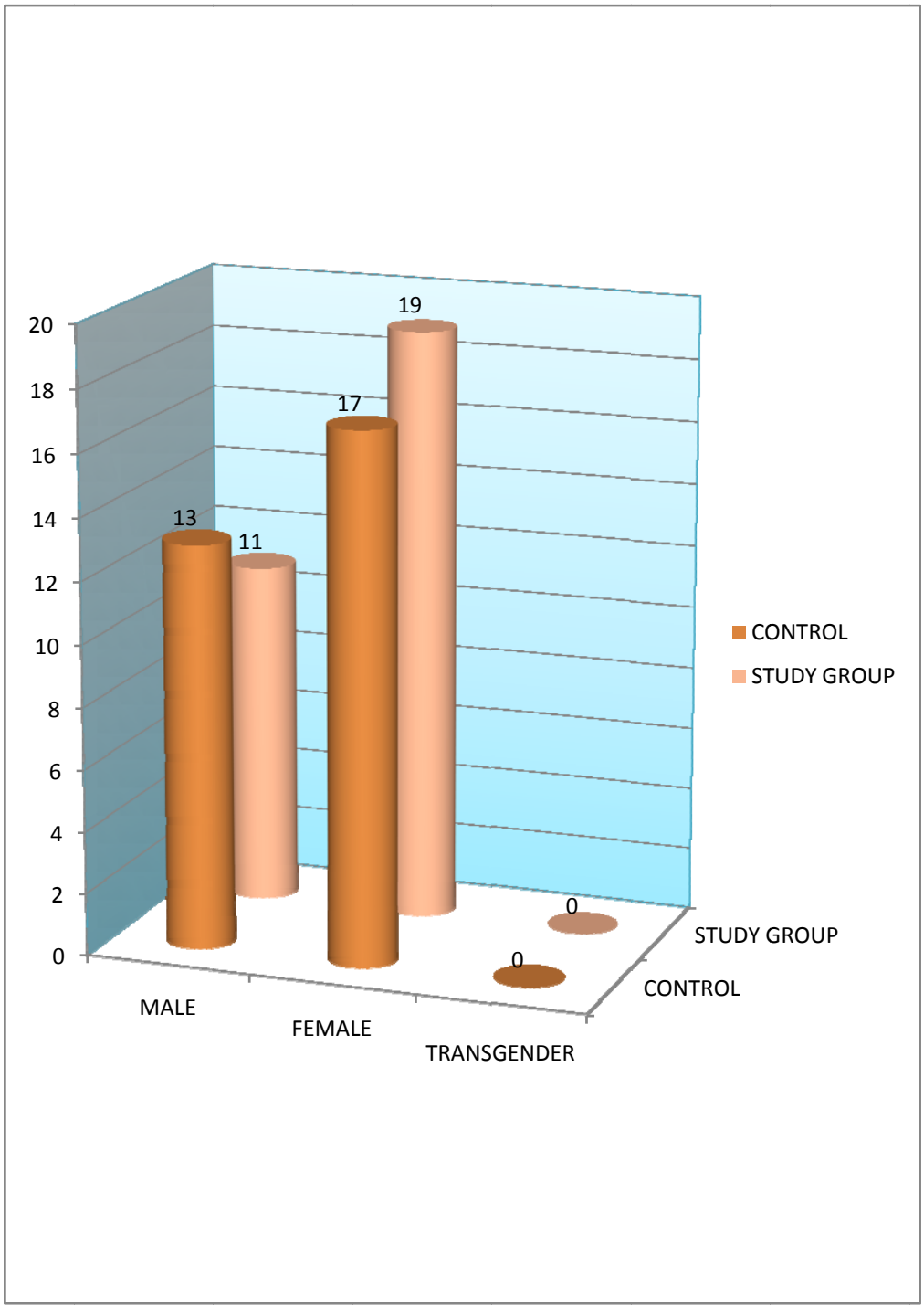

Figure 3 Frequency and percentage distribution according to gender of premature babies

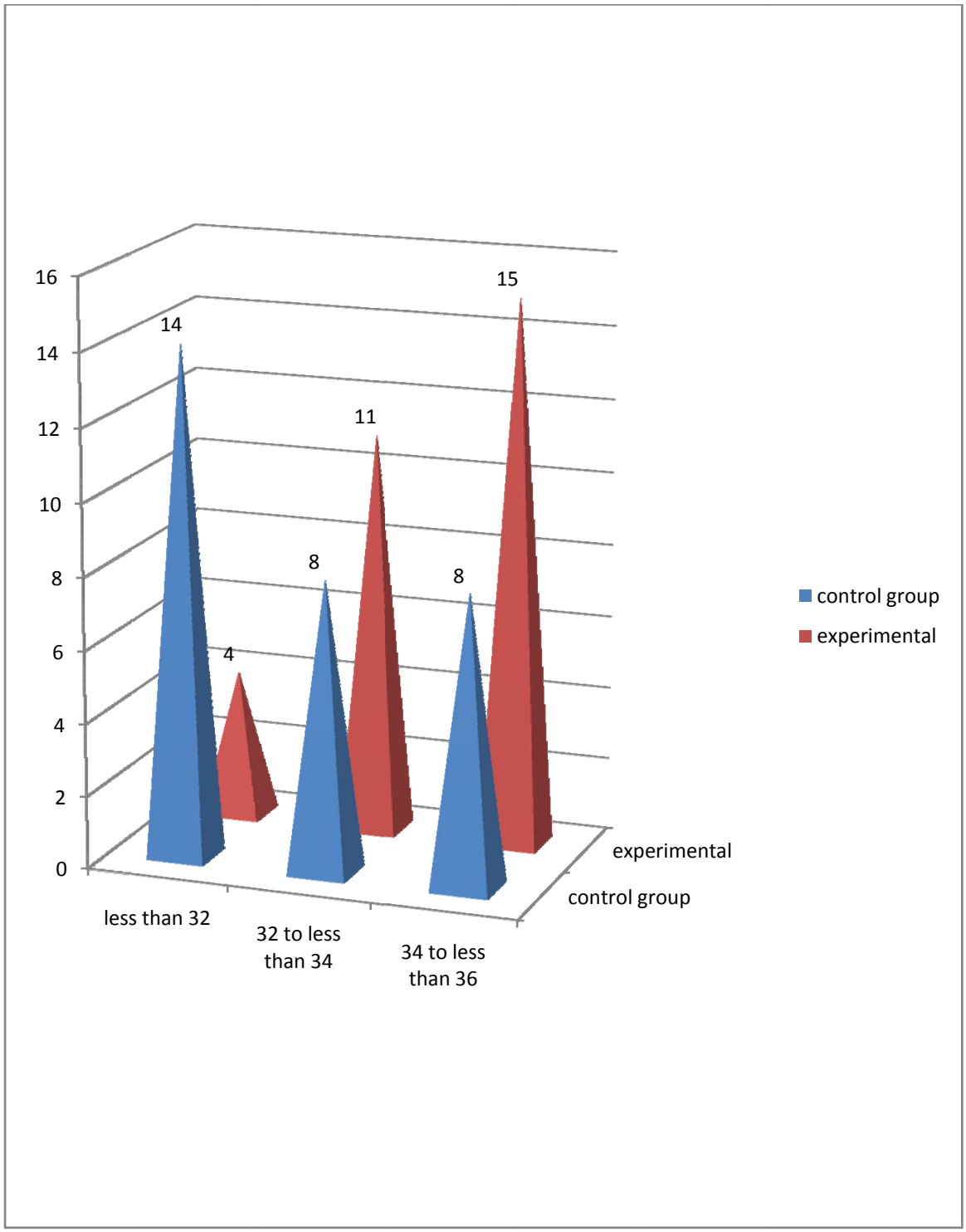

Figure 4 Frequency and percentage distribution according to gestational age

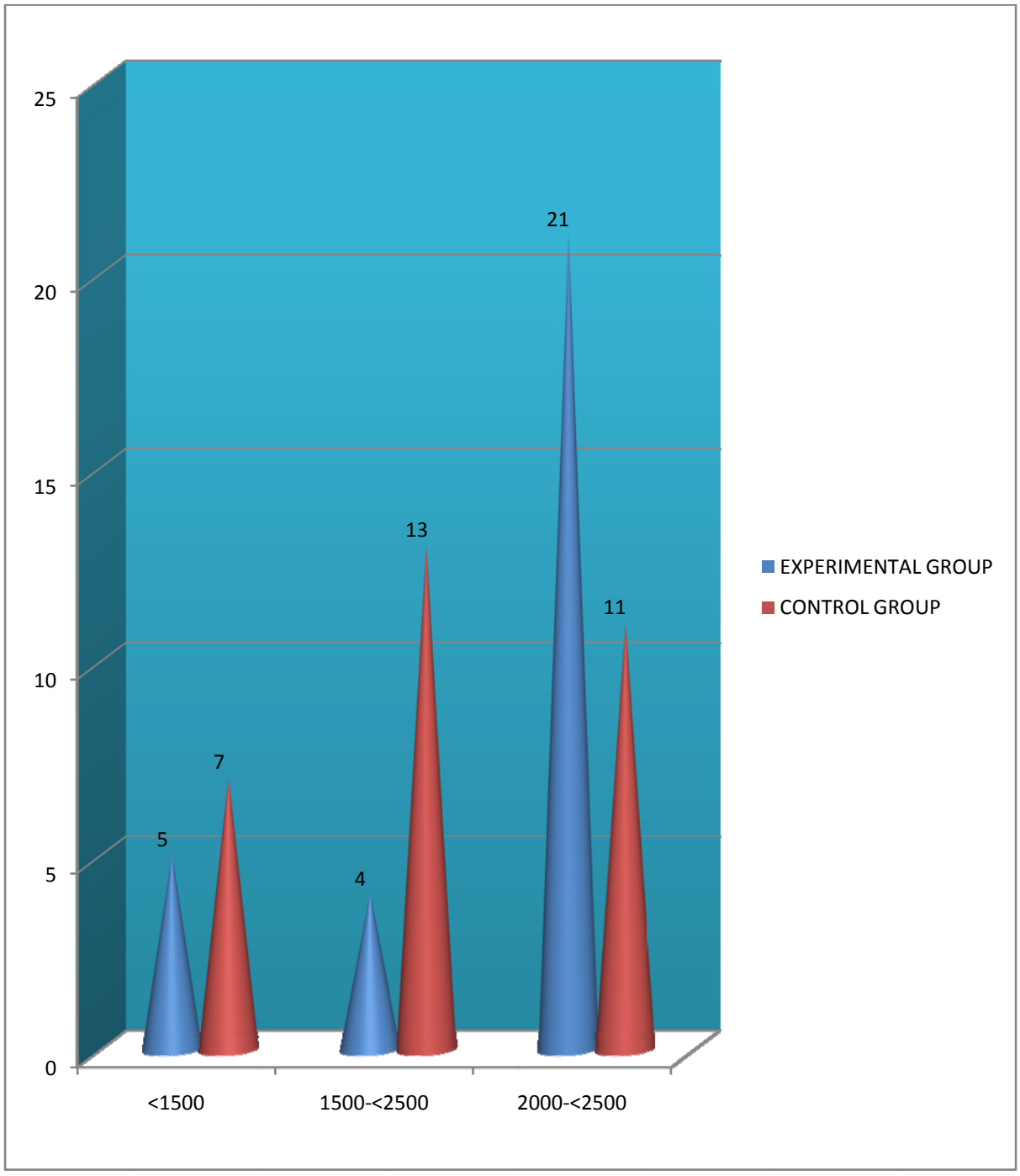

Figure 5 Frequency and percentage distribution according to birth weight

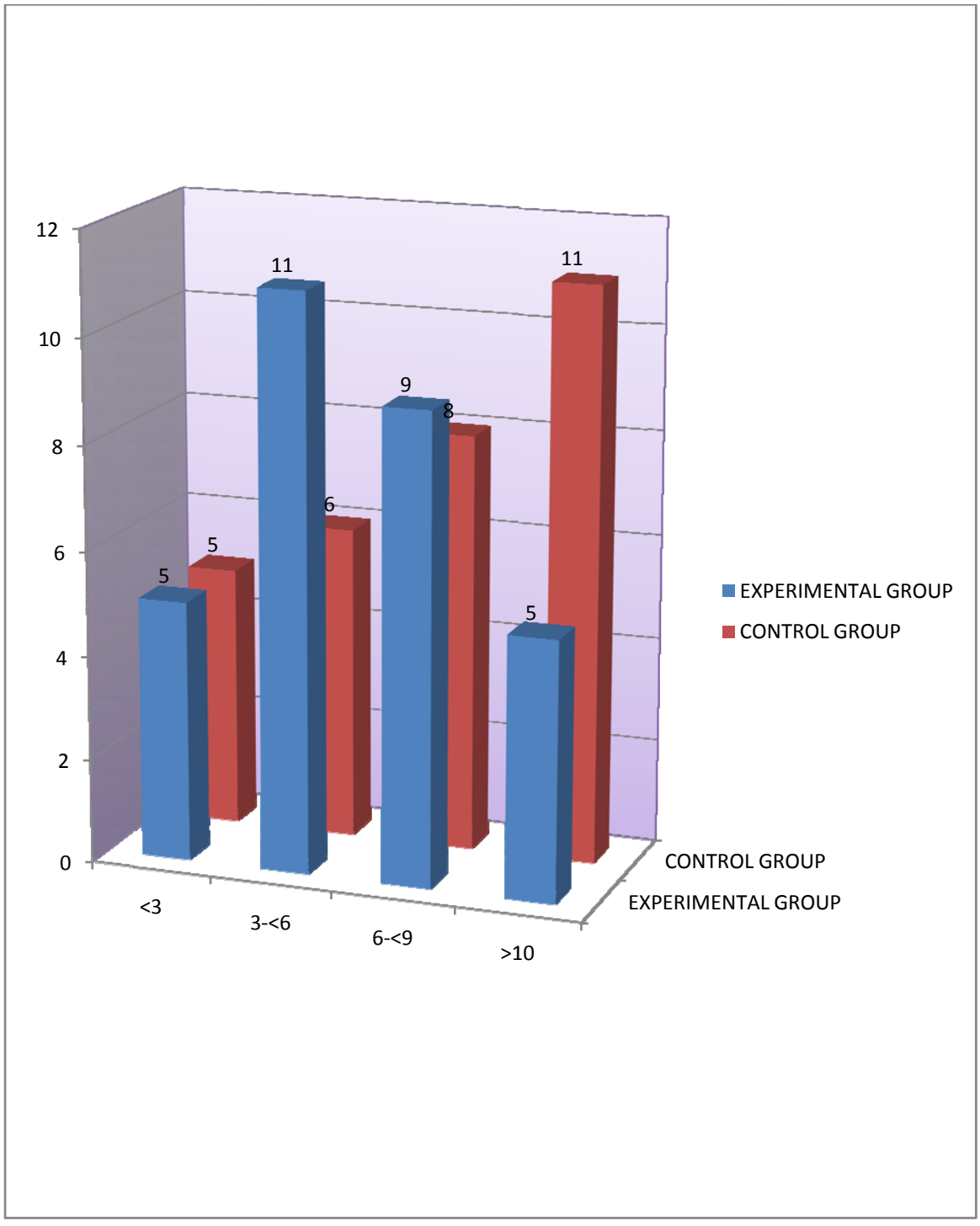

Figure 6 Frequency and percentage distribution according to chronological / age

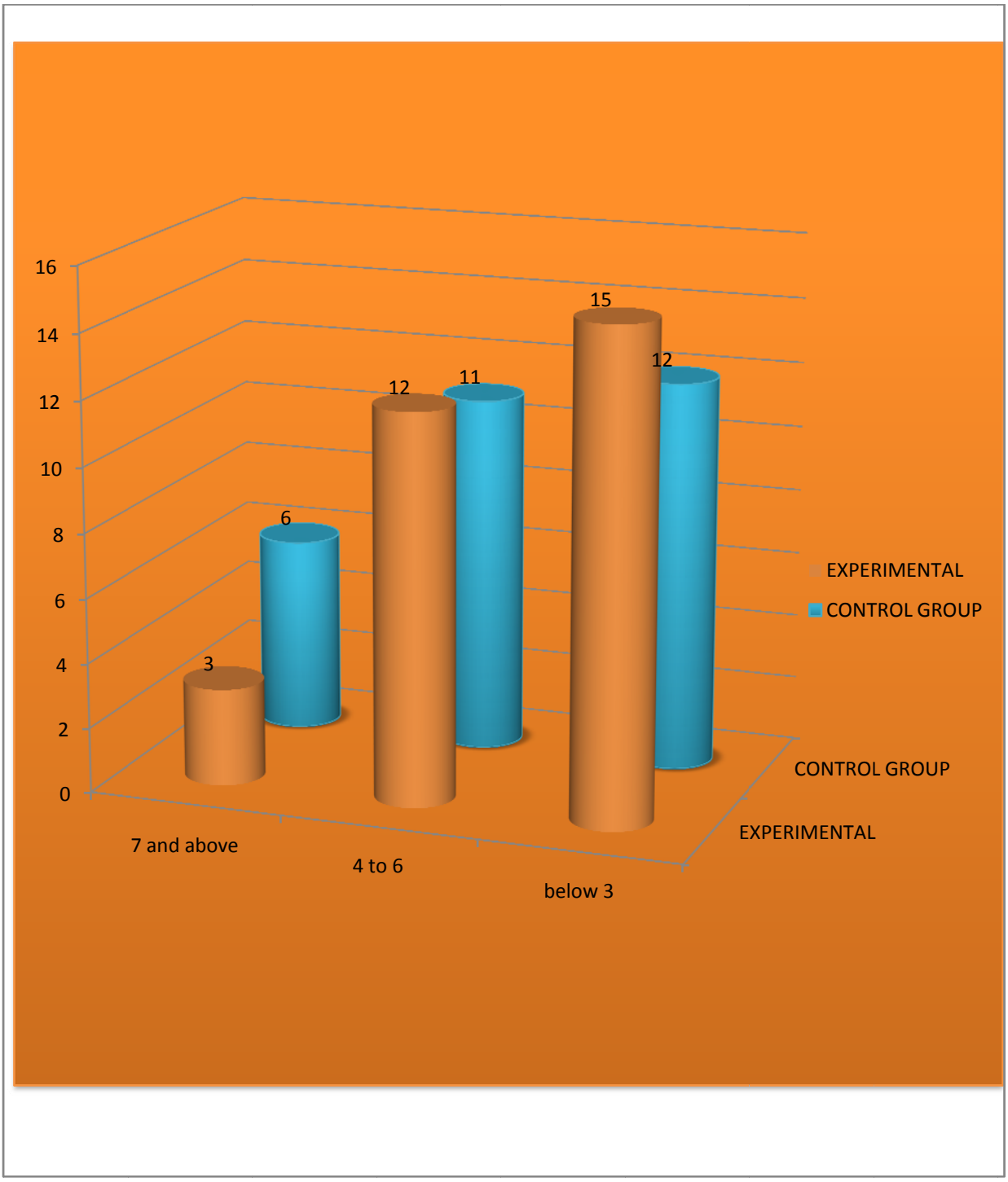

Figure 7 Frequency and percentage distribution according to APGAR

Table 1.1 Frequency and Percentage Distribution of Mothers in Both Experimental and Control Groups According to their Characteristics

N=60

Mothers' characteristics	Experimental Group		Control Group	
	n	%	n	%
1.Age in years				
a) less than 20 years	4	13.3	0	0
b)20 to less than 30years	20	66.7	22	73.3
c)30 to less than 40 years	6	20.0	8	26.7
2.Level of education				
a)Illiterate	9	30.0	8	26.7
b)Read & write	5	16.7	0	0
c)Moderately educated	9	30.0	12	40.0
d)Highly educated	7	23.3	10	33.3
3.Employment				
a)Worked	10	33.3	13	43.3
b)Not worked	20	66.7	17	56.7
4.Parity				
a)less than 3	19	63.3	24	80
b)3 to less than 4	11	36.7	5	16.7
c)more than 4	0	0	1	3.3

5.Type of delivery a)Normal vaginal delivery b)Cesarean section	 20 10	 66.7 33.3	 16 14	 53.3 46.7

Regarding Age :- 4(13.3%) were less than 20 years, 20(66.6%) were 20 to less than 30 years, 6(20%) were 30 to less than 40 years in experimental group and 0(0%) were less than 20 years, 22(73.3%) were 20 to less than 30 years, 8(26.7%) were 30 to less than 40 years in control group.

Regarding education :- 9(30%) are illiterate,5(16.6%) can read & write, 9(30%) are moderately educated , 7(23.3%) are highly educated in experimental group and 8(26.6%) are illiterate,0(0%) can read & write, 12(40%) are moderately educated , 10(23.3%) are highly educated in control group.

Regarding Employment :- 10(33.3%) were working mothers ,20(66.6%) were not working mothers in experimental group and 13(43.3%) were working mothers,17(56.6%) were not working mothers in control group.

Regarding Parity:- 19(63.3%) were less than 3,11(36.6%) were 3 to less than 4,0(0%) were more than 4 in experimental group and 24(80%) were less than 3,5(16.6%) were 3 to less than 4,1(3.3%) were more than 4 in control group.

Regarding type of delivery :- 20(66.6%) were normal vaginal delivery,10(33.3%) were cesarean section in experimental group and 16(53.3%) were normal vaginal delivery,14(46.4%) were cesarean section in control group.

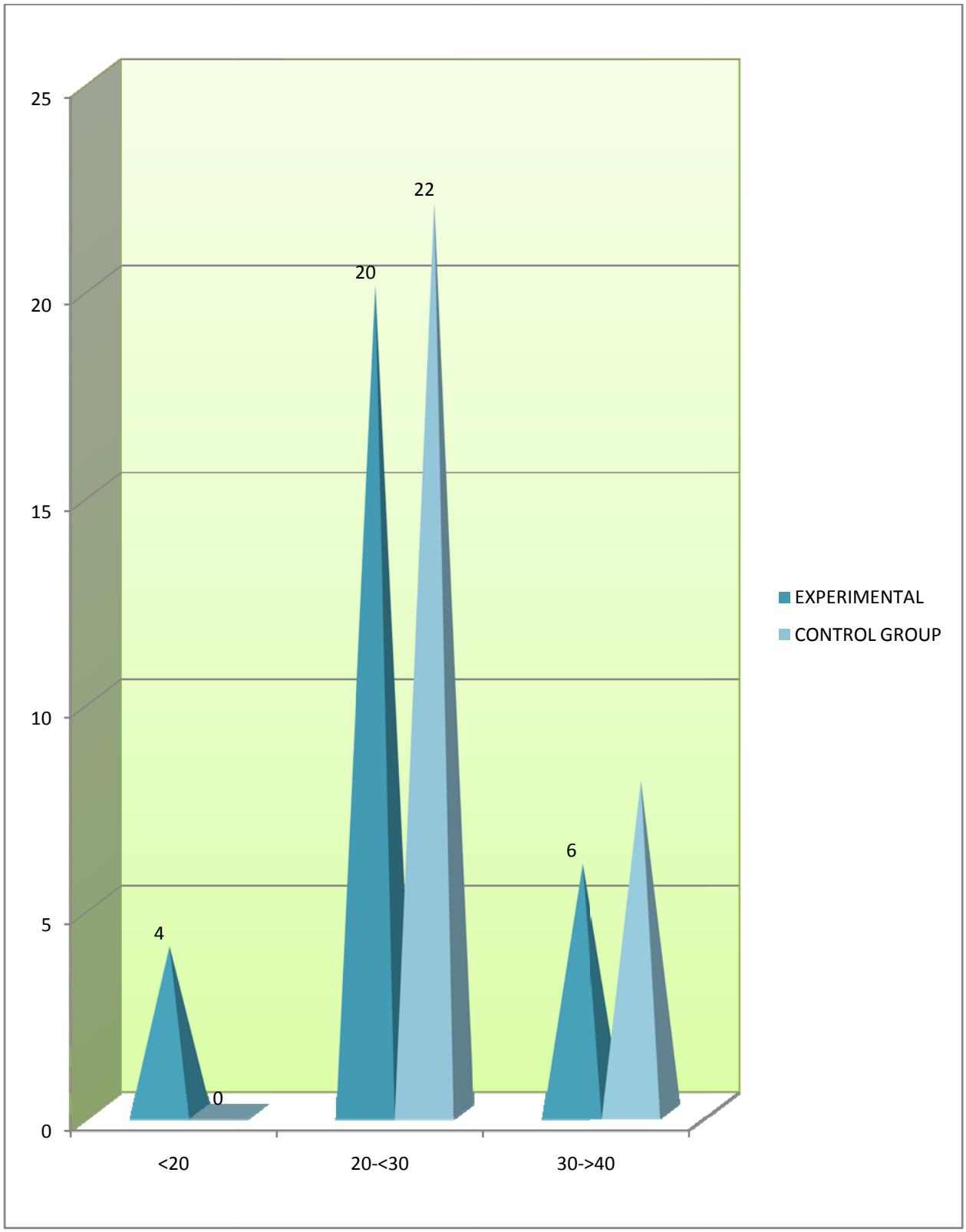

Figure 10 Frequency and percentage distribution according to age of mothers

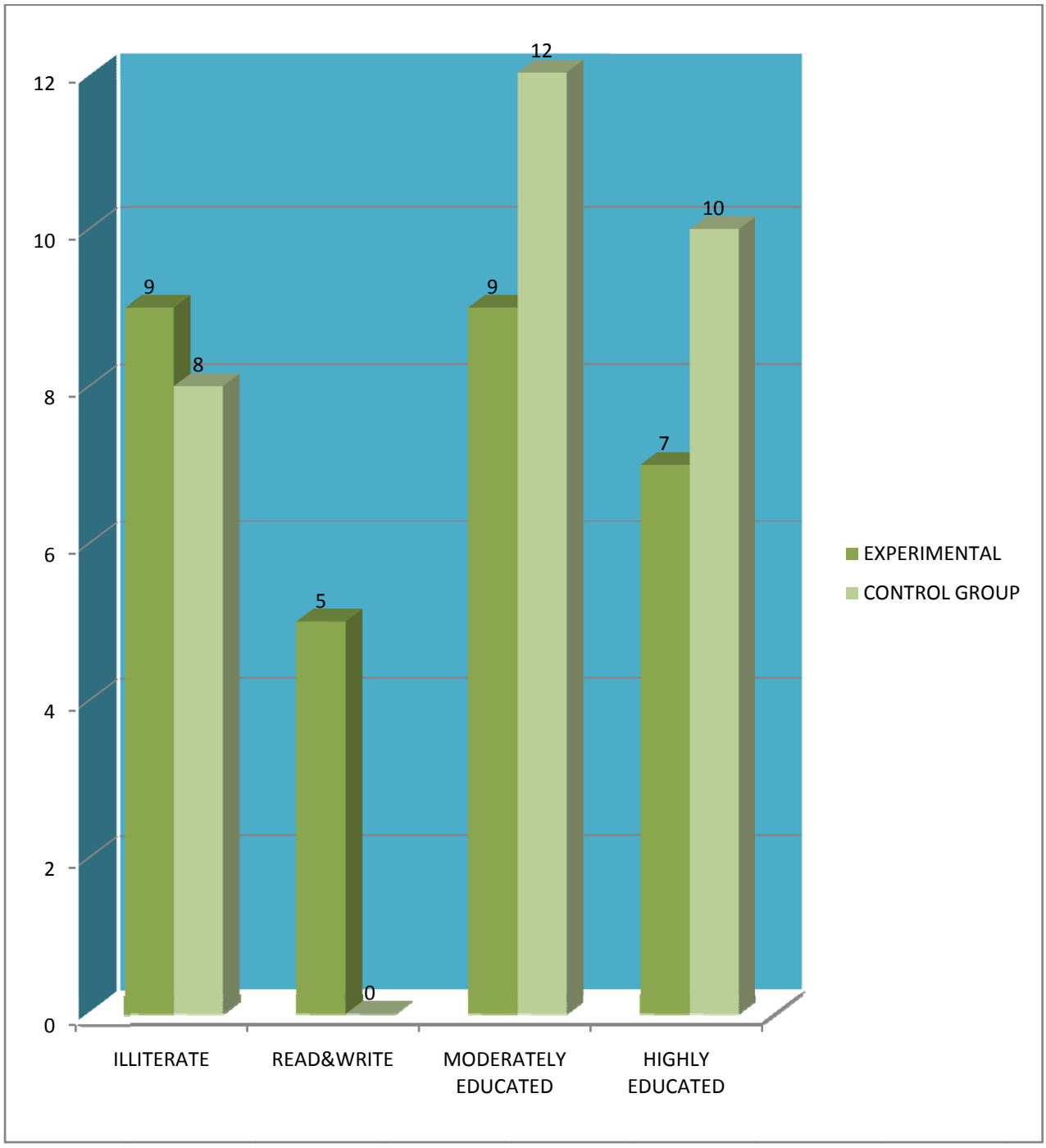

Figure 11 Frequency and percentage distribution according to education of mothers

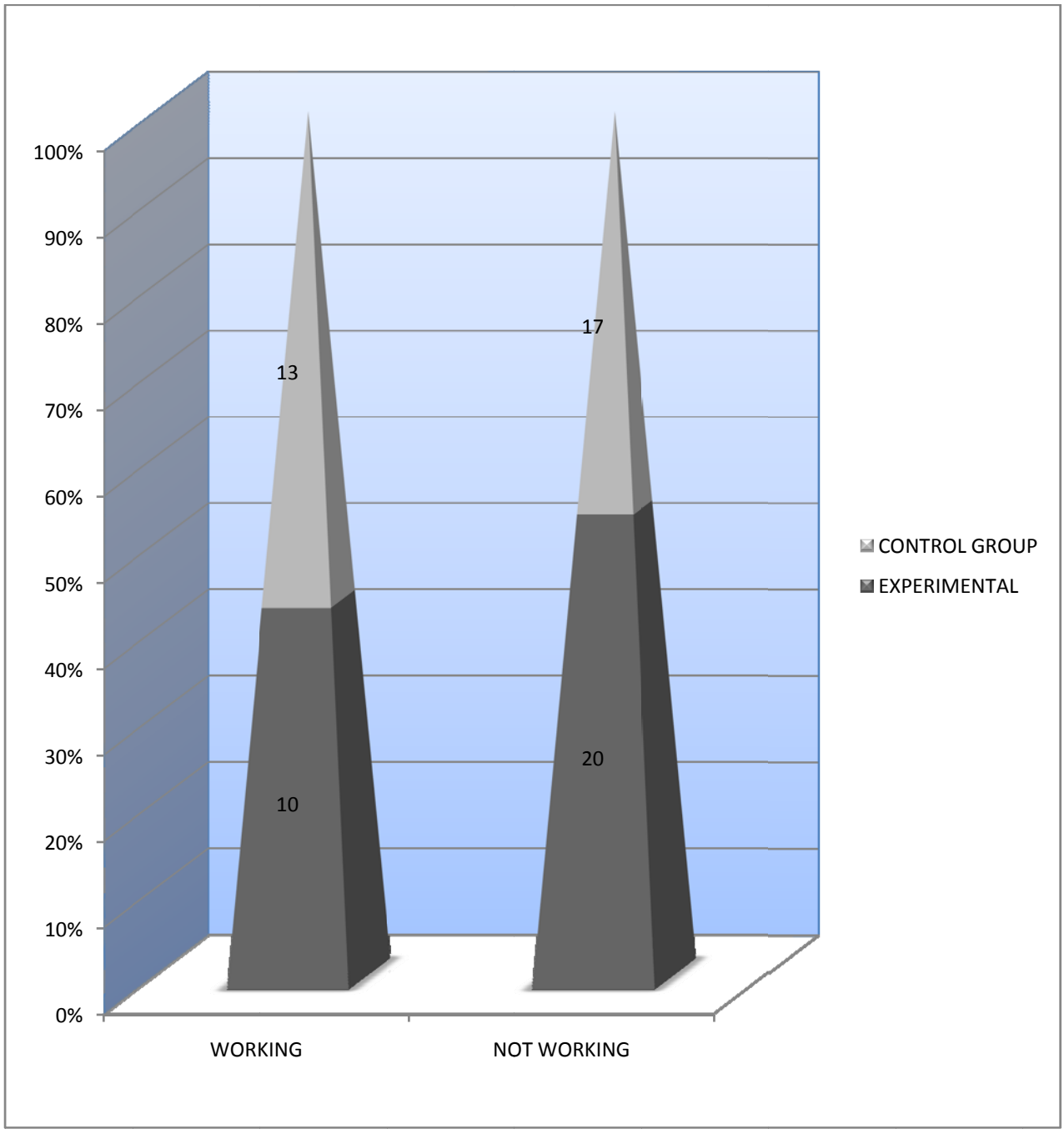

Figure 12 Frequency and percentage distribution according occupation

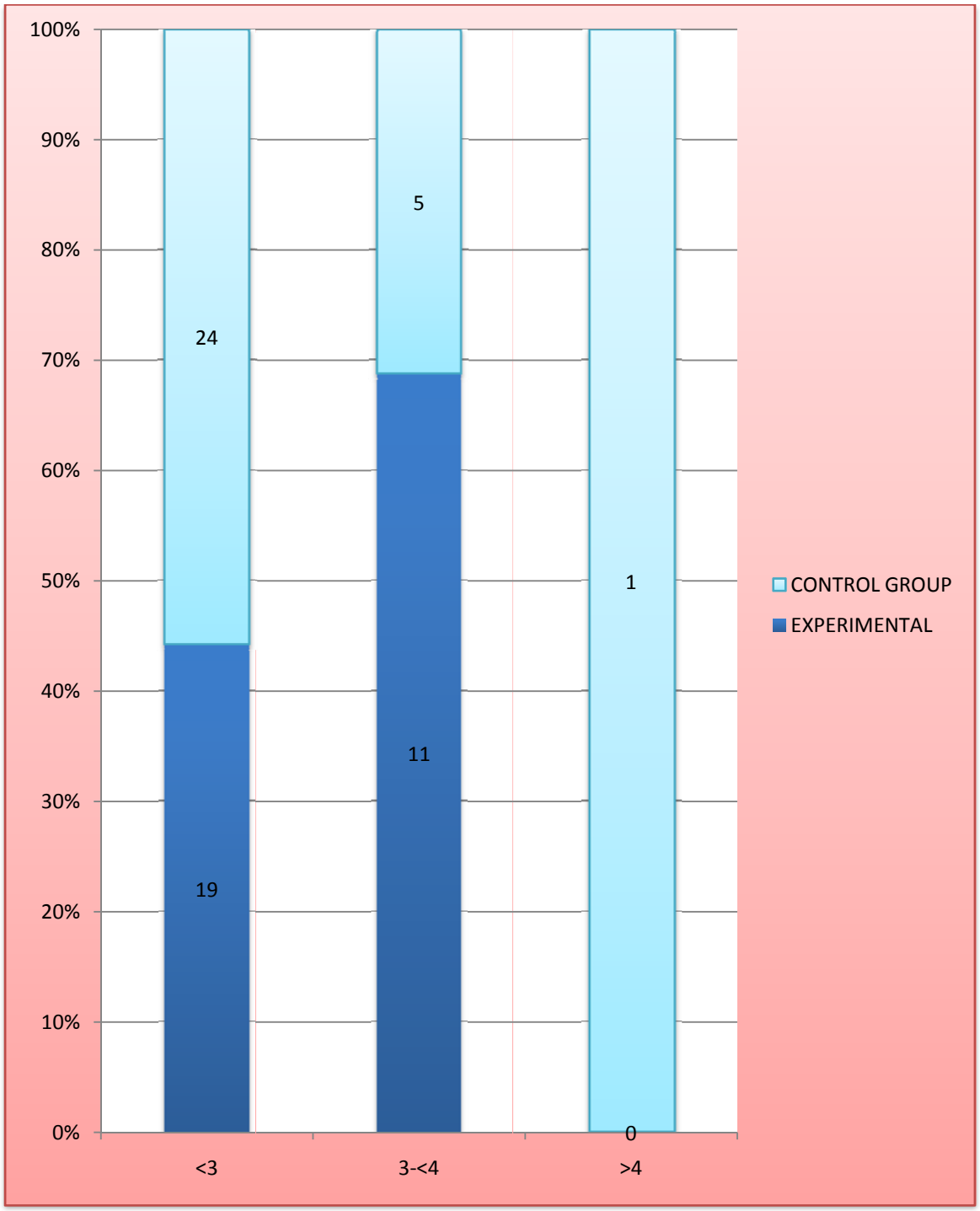

Figure 13 Frequency and percentage distribution according to parity

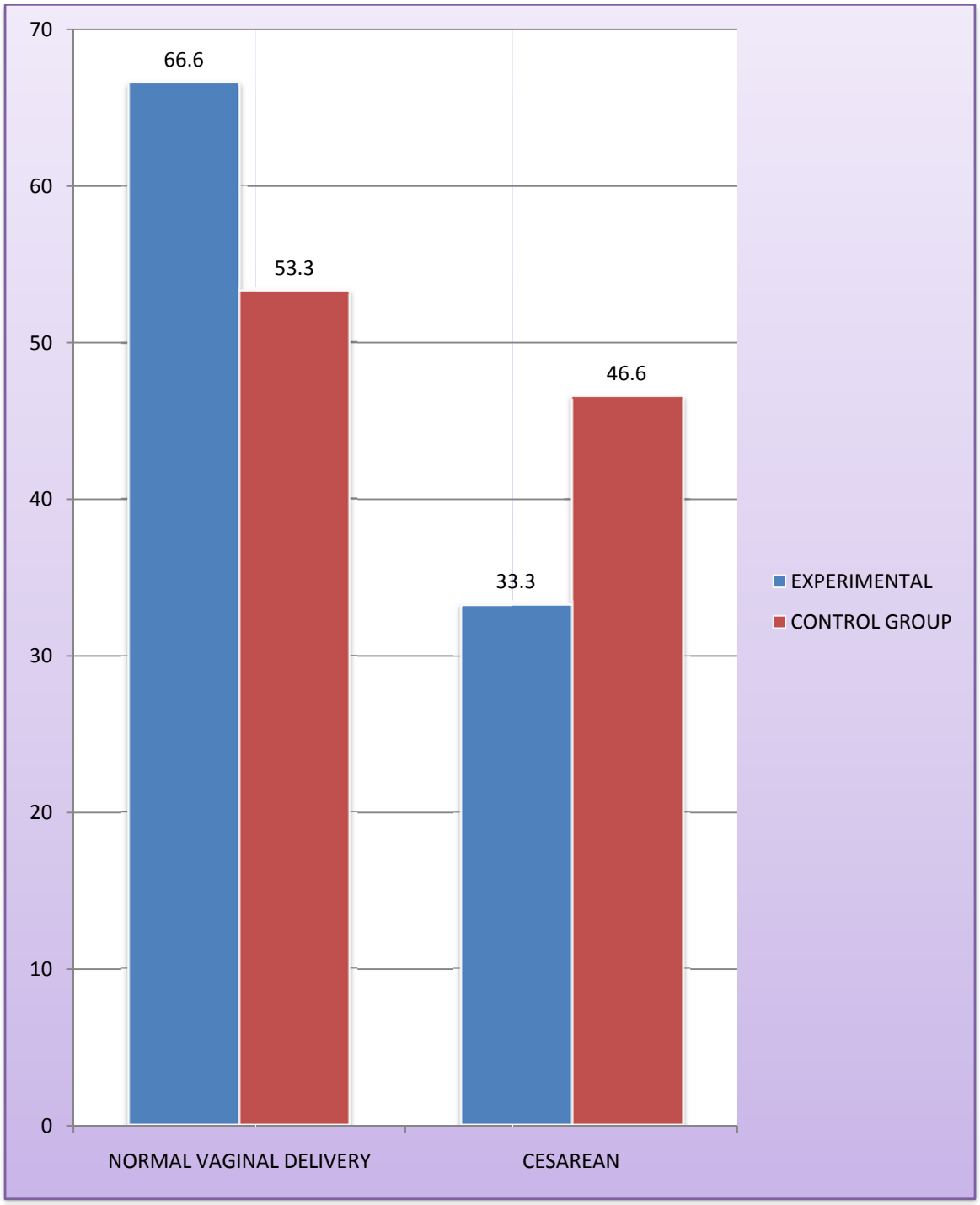

Figure 14 Frequency and percentage distribution according to type of delivery

Section II

Table 2 Frequency and percentage Distribution of Preterm babies' Physiological Outcomes in Both Experimental and Control Groups N=60

Physiological outcomes	Experimental group				Control group			
	Pre		Post		Pre		Post	
	No	%	No	%	No	%	No	%
1.Heart rate(b/min)								
a) Bradycardia (<120)	0	0	5	16.7	0	0	0	0
b)Normal (120-150)	25	83.3	25	83.3	27	90	27	90
c)Tachycardia (>150)	5	16.7	0	0	3	10	3	10
2.Respiratory rate (b/min)								
a) Bradypnea (<35)	3	10	4	13.3	2	6.7	2	6.7
b)Normal (35-50)	27	90	26	86.7	24	80.0	24	80.0
c) Tachypnea(>50)	0	0	0	0	4	13.3	4	13.3
3.Temperature								
a)Hypothermia (<36.5)	12	40.0	2	6.7	3	10	3	10
b)Normal (36.5-37.2)	14	46.7	28	93.3	27	90	27	90
c)Hyperthermia (>37.2)	4	13.3	0	0	0	0	0	0
5.Weight gain{grams}								
a)less than 50 gms	3	10	6	20	2	6.6	2	6.6
b)50 to less than 100gms	10	3	11	36.6	24	80	24	80
c)more than100gms	17	55.6	12	40	4	13.3	4	13.3

Table 2.1 Comparison of the Physiological outcomes among preterm babies before and after KMC application N=30

Aspect	Pre-test		Post-test		Paired 't' test Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Physiological outcomes	7.3	1.62	3.83	1.89	37.29*

*Significant

Table: 2.1 shows that in pre-test, the mean value of Physiological outcomes was 7.3 with the standard deviation of 1.62 and post-test mean value of level of pain was 3.83 with the standard deviation of 1.89. The paired 't' test value obtained 37.29 was significant , $P<0.05$.

It is inferred that, there is a highly significant effectiveness in physiological outcomes among pre term babies after KMC as measured by the post-test. Hence the stated hypothesis H_1 was accepted.

Table 2.2 Mean, Standard Deviation and independent "t" test value of Physiological outcomes after kangaroo mother care. N=60

S NO	Physiological outcomes	Post Test		"t" Test value
		Mean	Standard deviation	
1	Experimental Group Post Test	9.98	3.27	9.318*
2	Control Group Post Test	4.65	3.02	

*Significant at level $p<0.05$

Table 2.2 shows that the mean value for the post test is 9.98 and the standard deviation is 3.27 and the mean pre test value is 4.65 and standard deviation is 3.02. The tabulated "t" value is 1.77 and the obtained "t" value is 9.318,it is significant at $p<0.05$ level. H_1 is accepted.

Section III

Table (3): Frequency and percentage Distribution of Preterm babies' Behavioral Outcomes in Both Experimental and Control Groups

N=60

Behavioral outcomes	Experimental group				Control group			
	Pre		Post		Pre		Post	
	n	%	n	%	n	%	n	%
1.Crying								
a) Shrill cry	29	96.7	1	3.3	9	30	7	23.3
b)High pitched cry								
c)Low pitch cry	1	3.3	29	96.7	21	70	23	76.7
d) Normal								
2.Sleep								
a)Quite Sleep	5	16.7	22	73.3	1	3.3	4	13.3
b)Interrupted Sleep	25	83.3	8	26.7	29	96.7	26	86.7
3.Feeding type								
a)Breast feeding	19	63.3	22	73.3	4	13.3	4	13.3
b)Bottle feeding	11	36.7	8	26.7	26	86.7	26	86.7
4.Response to sound								
a) Responds to pleasant sounds	3	10.0	6	20.0	2	6.6	2	6.6
b) Quiet	10	3.0	11	36.6	24	80.0	24	80.0
c) Attentive to your voice	17	55.6	12	40.0	4	13.3	4	13.3

Table 3.1 Comparison of the behavioral outcomes among preterm babies before and after KMC application. N=30

Aspect	Pre-test		Post-test		Paired 't' test Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Behavioral outcomes	6.2	1.69	3.93	1.87	34.29*

*Significant

Table: 3.1 shows that in pre-test, the mean value of behavioral outcomes was 6.2 with the standard deviation of 1.69 and post-test mean value of level of pain was 3.93 with the standard deviation of 1.87. The paired 't' test value obtained 34.29 was significant , $P<0.05$.

It is inferred that, there is a highly significant effectiveness in behavioral outcomes among pre term babies after KMC as measured by the post-test. Hence the stated hypothesis H_1 was accepted.

Table 3.2 Mean, Standard Deviation and independent "t" test value of behavioral outcomes after kangaroo mother care. N=60

S NO	Behavioral outcomes	Post Test		"t" Test value
		Mean	Standard deviation	
1	Experimental Group Post Test	1.2	1.10	4.20*
2	Control Group Post Test	8.1	1.37	

*Significant at level $p<0.05$

Table 3.2 shows that the mean value for the post test is 1.2 and the standard deviation is 1.10and the mean pre test value is 8.1and standard deviation is 1.37. The tabulated "t" value is 1.98 and the obtained "t" value is 4.20,it is significant at $p<0.05$ level. H_1 is accepted.

Table (4): Distribution of Preterm babies' Psychosocial Outcomes Regarding their Mothers' Attachment and Satisfaction in Both Groups N=60

Psychological outcomes	Experimental group				Control group			
	Pre		Post		Pre		Post	
	n	%	n	%	n	%	n	%
1.Mother-infant attachment(bonding)								
a)Positive attachment	16	53.3	29	96.6	10	33.3	10	33.3
b)Negative attachment	14	46.6	1	3.3	20	66.6	20	66.6
2.Mother's satisfaction								
a)Satisfied	20	66.6	30	100	8	26.6	8	26.6
b)Dissatisfied	10	33.3	0	0	22	73.3	22	73.3
3.Mother's perception								
a)Confident when caring and touching baby	8	26.6	8	26.6	20	66.6	30	100
	22	73.3	22	73.3	10	33.3	0	0
b) Don't have information. Need adequate information regarding KMC								

Table 4.1 Comparison of the Psychological outcomes among preterm babies before and after KMC application.

N=30

Aspect	Pre-test		Post-test		Paired 't' test Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Psychological outcomes	1.2	1.10	8.1	1.37	21.8*

*Significant

Table: 4.1 shows that in pre-test, the mean value of Psychological outcomes was 1.2 with the standard deviation of 1.10 and post-test mean value of level of pain was 8.1 with the standard deviation of 1.37. The paired 't' test value obtained 21.8 was significant , $P<0.05$

It is inferred that, there is a highly significant effectiveness in Psychological outcomes among pre term babies after KMC as measured by the post-test. Hence the stated hypothesis H_1 was accepted.

Table 4.2Mean, Standard Deviation and independent "t" test value of Psychological outcomes after kangaroo mother care.

S NO	Psychological outcomes	Post Test		"t" Test value
		Mean	Standard deviation	
1	Experimental Group Post Test	2.86	0.91	26.6*
2	Control Group Post Test	9.2	0.90	

*Significant at level $p<0.05$

Table 4.2 shows that the mean value for the post test is 2.86 and the standard deviation is 0.91 and the mean pre test value is 9.2 and standard deviation is 0.90. The tabulated "t" value is 1.671 and the obtained "t" value is 26.6, it is significant at $p<0.05$ level. H_1 is accepted.

Section V

Table (5): Association between Mothers' Characteristics and their preterm babies' Attachment in the experimental Group.

Frequency, percentage and Chi-square distribution.

N=60

Mothers' demographic Characteristics	Maternal-Infant Attachment				Chi-square	Level of significance
	Positive Attachment		Negative Attachment			
	No	%	No	%		
1.Age in years					2.48	S
a)less than 20 years	0	0	2	8		
b)20 to less than 30 years	11	44	8	32		
c)30 to less than 40 years	2	8	7	23		
2.Level of education					2.32	NS
a)Illiterate	4	16	4	16		
b)Read & write	2	8	2	8		
c)Moderately educated	5	20	3	12		
d)Highly educated	2	8	8	27		
3.Employment					0.19	S
a)Worked	4	16	4	16		
b)Not worked	9	36	13	43		

4.Parity a)Less than 3 b)3to less than 4 c)more than 4	 9 4 0	 36 16 0	 7 10 0	 28 23 0	0.34	 NS
5.Type of delivery a)Normal vaginal delivery b)Cesarean section	 7 6	 28 24	 10 7	 40 23	2.49	S

Statistical Significant differences(***P*** -value ≤ 0.05). * No statistical significant Differences(***P*** -value > 0.05).

Table (5)shows that there is association of demographic variables like age and type of delivery and there is no association of demographic variables like level of education, employment and parity with the post test score of KMC among experimental group in regard of Maternal-Infant Attachment

Section VI

Table (6) : Association Between Mothers' Characteristics and their Satisfaction in the Experimental Group using Chi-square N=60

Mothers' demographic Characteristics	Maternal Satisfaction					Level of significance
	Satisfied		Dissatisfied		Chi-square	
	No	%	No	%		
1.Age in yrs						
a) less than 20 years	0	0	2	4	3.83	S
b) 20 to less than 30 years	13	52	6	24		
c) 30 to less than 40 years	2	8	7	23		
2.Level of education						
a)Illiterate	4	16	4	16	1.29	NS
b)Read & write	2	8	2	8		
c)Moderately educated	6	24	2	8		
d)Highly educated	3	12	7	23		
3.Employment						
a)Worked	5	20	8	27	0.33	NS
b)Not worked	10	40	7	28		
4.Parity						
a)Less than 3	10	40	6	24	0.11	NS
b)3to less than 4	5	20	9	30		
c)more than 4	0	0	0	0		

5.Type of delivery a)Normal vaginal delivery b)Cesarean section	 8 7	 32 28	 9 6	 36 20	3.90	S

statistical significant Differences(***P*** -value ≤ 0.05)

No Statistical Significant differences(***P*** -value > 0.05).

Table (6) shows that there is association of demographic variables like age and type of delivery and there is no association of demographic variables like level of education, employment and parity with the post test score of KMC among experimental group.

CHAPTER V

DISCUSSION

The aim of the present study is to Assess the Effectiveness of Kangaroo Mother care on Preterm Infant's Physiological ,Behavioral and Psychosocial Outcomes in a selected Pediatric Hospital, Kanyakumari district .The study was conducted using quasi -experimental pre test post test design. The study was conducted in Agasthiyar muni hospital, vellamadam, nagercoil, k.k dist, which is a 150 bedded hospital, and NICU has 6 beds and Arul mission hospital, vellamadam, nagercoil, k.k dist, which is a 150 bedded hospital, and NICU has 4 beds .The sample size was 60, and the samples were selected using purposive sampling technique.

Kangaroo Mother Care Assessment Flow Sheet (KMCAFS) was prepared for the study. It consist of demographic data of preterm infants and their mothers and physiological, behavioral and psycho social parameters are used.

The effectiveness of KMC were analyzed using descriptive statistics (mean, standard deviation, frequency, percentage distribution) and inferential statistics (independent "t" test, chi –square test). Discussion and findings were arranged on objective of the study.

The first objective of the study was to assess the effectiveness physiological, behavioral and psychosocial outcome among study and control group.

It shows that approximately half (50% and 26.6%) of premature infants' gestational age is 34 to less than 36 weeks and less than 32 weeks in both study and control groups respectively

The second objective of the study is to Assess the effectiveness of Kangaroo mother care by using Kangaroo Mother care assessment flow sheet (KMCAFS) experimental and control group.

The mean value in pre-test, the mean value of Physiological outcomes was 7.3 with the standard deviation of 1.62 and post-test mean value of level of pain was 3.83 with the standard deviation of 1.89. The paired 't' test value obtained 37.29 was significant , $P<0.05$.The mean value for the post test is 9.98 and the standard deviation is 3.27 and the mean pre test value is 4.65 and standard deviation is 3.02. The tabulated "t" value is 1.77 and the obtained "t" value is 9.318,it is significant at $p<0.05$ level. The mean value in pre-test, the mean value of behavioral outcomes was 6.2 with the standard deviation of 1.69 and post-test mean value of level of pain was 3.93 with the standard deviation of 1.87. The paired 't' test value obtained 34.29 was significant , $P<0.05$.

Hence the calculated value was higher when compared with table .value, it highlights that the technique has significant effect in KMC for preterm babies in improving physiological and behavioral aspects of health. Hence the stated hypotheses H_1 is accepted.

Thus it is inferred that kangaroo mother care was effective in improving physiological and behavioral aspects of health among preterm babies.

The third objective of the study is to find out the association between Mothers' Characteristics and their preterm babies' Attachment in the Study Group.

The study findings revealed that there is association of demographic variables like age and type of delivery and there is no association of demographic variables like level of education, employment and parity with the post test score of KMC among study group in regard of Maternal-Infant Attachment. Hence the stated hypotheses H_2 were accepted.

The fourth objective to find out the Association Between Mothers' Characteristics and their Satisfaction in the Study Group.

The study findings revealed that there is association of demographic variables like age and type of delivery and there is no association of demographic variables like level of education, employment and parity with the post test score of KMC among study group.

On investigating the effect of KMC on the premature infants' psychosocial outcomes. The results of the present study revealed that there was statistical significant differences between pre and post KMC application (X2 =12.4 and 1.0 at, *P*-Value 0.00) as regards mother-infant attachment (bonding) and their satisfaction pre and post KMC group respectively compared with mothers in conventional care group.

On investigating the mothers' perceptions regarding KMC. The result of the present study found that the majority of mothers didn't had information

about KMC and few of them felled distance from the baby pre KMC, compared with post KMC, most of them had adequate knowledge about KMC and nearly half of them requested to apply KMC and they are confident when caring and touching their babies

One of the biggest obstacles to adopting KMC is the mistaken belief that KMC is second-rate care that is more time-consuming than regular care for small babies(29). These misconceptions must be dispelled through advocacy, training, education and behavior change communication to support KMC implementation. This type of strategy would target providers and pregnant mothers/families, sensitizing them to the benefits of KMC.

Also, it was reported that skin-to-skin holding provided mothers with a greater sense of wellbeing, personal fulfillment and confidence in taking care of their infant during the night as exhausting. No mother would have preferred not to perform continuous KMC or to terminate KMC earlier than they did. This could be due to lack of application and researches about KMC application.

CHAPTER- VI

SUMMARY AND RECOMMENDATIONS

This chapter presents a brief account of the present experimental. Conclusions are drawn from the findings and the implication of the results is started. It also includes recommendations for future research in this area.

Summary

The present experimental was done to Assess the Effectiveness of Kangaroo Mother care on Preterm Babies Physiological ,Behavioral and Psychosocial Outcomes in a selected Hospital.

Objective of the study:

1. To assess the effectiveness physiological, behavioral and psychosocial outcome among experimental and control group.
2. To Assess the effectiveness of Kangaroo mother care by using Kangaroo Mother care assessment flow sheet (KMCAFS) experimental and control group.
3. To find out the association between Mothers' Characteristics and their preterm babies' Attachment in the Experimental Group.
4. To find out the Association between Mothers' Characteristics and their Satisfaction in the Experimental Group.

Quasi experimental pre test post test research design was used to assess the effectiveness of Kangaroo Mother care on Preterm Babies Physiological ,Behavioral and Psychosocial Outcomes in a selected Hospital.

Purposive sampling technique was adopted to select the samples based on inclusion and exclusion criteria. The total sample size was 60.

The content validity was checked by experts in the field of nursing and medicine and suitable modifications were made wherever needed.

Data regarding demographic variables were collected from mother and from hospital records. Kangaroo mother care assessment flow sheet was used for the experimental to assess the physiological, behavioral and psychosocial outcome

.

The collected data were analyzed by using both descriptive statistics (mean, standard deviation, frequency, percentage) and inferential statistics (independent "t" test, paired t test and chi-square test) and results were drawn.

Major study Findings

Major study findings of the study are

- The mean value in pre-test, the mean value of Physiological outcomes was 7.3 with the standard deviation of 1.62 and post-test mean value of level of pain was 3.83 with the standard deviation of 1.89. The paired 't' test value obtained 37.29 was significant , $P<0.05$.
- The mean value for the post test is 9.98 and the standard deviation is 3.27 and the mean pre test value is 4.65 and standard deviation is 3.02. The tabulated "t" value is 1.77 and the obtained "t" value is 9.318,it is significant at $p<0.05$ level.
- The mean value in pre-test, the mean value of behavioral outcomes was 6.2 with the standard deviation of 1.69 and post-test mean value of level of pain was 3.93

with the standard deviation of 1.87. The paired ‘t’ test value obtained 34.29 was significant , P<0.05.

- Hence the calculated value was higher when compared with table value, it highlights that the technique has significant effect in KMC for preterm babies in improving physiological and behavioral aspects of health.
- There is statistical significant association (X2 = 2.48 and 2.49, at *P*-value ≤ 0.05) regarding mothers' age and the type of delivery in maternal-babies attachment respectively.
- There is statistical significant association (X2 = 3.72 and 3.70,at *P*-value≤ 0.05) regarding mothers' age and the type of delivery in relation to their satisfaction with their premature babies respectively

Conclusion

The current experimental concluded that Kangaroo Mother Care (KMC) was effectively and positively promoted premature infants' physiological stability, behavioral organization and enhanced psychosocial outcomes than those cared by the conventional care. Also, it was reported that skin-to-skin holding provided mothers with a greater sense of wellbeing, personal fulfillment and confidence in taking care of their infant during the night as exhausting. No mother would have preferred not to perform continuous KMC or to terminate KMC earlier than they did. This could be due to lack of application and researches about KMC application

Implications of the study

According to Tolsma (1995), the section of research report that focuses on nursing implications usually specific suggestions for nursing practice ,nursing education ,nursing administration and nursing research.

Nursing Practice

- The findings of the current experimental can be kept as base line for providing kangaroo mother care.
- Kangaroo mother care procedure can be incorporated in nursing practice by making aware about Kangaroo mother care which will improve knowledge and practice on care of preterm babies in NICU.
- The experimental helps to develop specific skills in using demonstration as a method of teaching steps of KMC among mothers.

Nursing Education

- KMC procedure and KMC assessment can be taught to nursing students.
- It helps in improving knowledge for all nursing personnel in various aspects.

Nursing Research

- The experimental findings can be added to the research review regarding the KMC
- The experimental findings can be kept as the baseline data and further research can be conducted in same setting.

- The findings of research experimental will help in building and straightening the knowledge.

Nursing Administration

- The nurse can become an effective coordinator and leader by introducing kangaroo mother care in community settings.

Limitations

- Long term follow up and care is not possible due to limited time

Recommendations

Based on the findings of the present experimental, the following recommendations are suggested:

1.The same study can be conducted in community settings

2. The study can be done in large samples

3. The study can be done as descriptive study among health care personnel to assess knowledge regarding KMC.

4. The study can be conducted on low birth weight babies also

5.The study can be conducted as structured teaching program for fathers those who care babies also.

6. Educational training program for all neonatal nurses in skills necessary to implement the KMC.

7. Inform all pregnant women about the benefits and management of KMC through booklets, posters, kangaroo care practical guide and support groups that may assist them even after delivery.

8. Hospital support for the mothers is needed to facilitate and continues early initiation of KMC through allowing the mother to visit her premature infants' all of the time without restrictions.

9. Help the mothers who are delivered through cesarean section babies and premature or sick babies initiate KMC as soon as possible (able to tolerate transfer and skin contact without physiologic or behavioral compromise).

10. Prepare a well-equipped room with warming and comforting needs for premature babies and their mothers.

11. Application of KMC as the standard of care in all NICUs.

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Abstract: Background: Kangaroo Mother Care (KMC) is a method of skin-to-skin contact that has physiological, behavioral and psychosocial gains for preterm infants. The aim of this study was to evaluate the effect of KMC on preterm babies physiological, behavioral and psychosocial outcomes. Study design: It was a quasi-experimental study. Subjects and Methods: A purposive sample composed of sixty preterm babies and their mothers were chosen from the Neonatal Intensive Care Unit (NICU) at Agasthiar muni and arul mission hospital, according to inclusive and exclusive criteria and recruited into two identical groups: group one was the experimental group(30) received KMC and group two was the control group (30) received conventional care. The data were collected through using the kangaroo Mother Care Assessment Flow Sheet(KMCAFS) (pre/post).The researcher was available for 6 weeks, five hours per day from 10 am to 3pm. The average number of cases that was taken per week ranged from 4 to 5 preterm babies and their mothers. Results: Approximately, fifty percent of preterm infants' gestational age was 34 -≤ 36 weeks and < 32 weeks in both study and control groups respectively. Meanwhile, the birth weight in three fourths of study group was 2000 - <2500 grams and more than half of preterm babies' diagnosis was prematurity. Regarding, the preterm infants' physiological outcomes, it was found that there was statistical significant differences pre and post KMC application (X2 = 17.64, 17.64,7.76 and 0.36 and *P*-value ≤0.05) concerning heart rate, respiratory rate, temperature episodes respectively. Conclusion: KMC was effectively and positively promoted preterm infants' physiological stability, behavioral organization and enhanced psychosocial outcomes than those cared by the conventional care. Recommendations: Educational training program for all neonatal

nurses in skills necessary to implement the KMC and further studies should be conducted to assess the neonatal nurses' knowledge, attitudes and practices regarding KMC.

Keywords: Kangaroo mother care , preterm babies, conventional care

APPENDIX - A

ELLEN COLLEGE OF NURSING

(Recognized by Government of Tamilnadu and Indian Nursing Council, New Delhi
Affiliated to the Tamilnadu Dr.M.G.R Medical University,Chennai)

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Dr.A.GUNASINGH EMMANUEL, M.A.,B.L.,Ph.D.,
Chairman & Correspondent

Date :
Ref :

To

Respected Sir,

G.L.AUXLIN NISHA is a student of Ellen College of Nursing; Coimbatore studying M.Sc (nursing) II year. She is conducting. 'A Study to assess the effectiveness of kangaroo mother care on preterm Babies ' physiological behavioural and psychosocial outcome in Selected hospital at Kanyakumari.'

This is for her research work to be submitted to the Tamilnadu Dr.M.G.R.Medical University in partial fulfillment of the university requirement for the university requirement for the award of M.Sc.., Nursing Degree.

As a part of her study she would like to collect data from Preterm Infant Mother from your well authorized hospital. Project will be furnished by the student personally. The norms, ethics and policies practiced in the hospital setting will be followed by the student.

Thanking you,

Yours faithfully,

PRINCIPAL

PRINCIPAL
ELLEN COLLEGE OF NURSING
NAVAKKARAI, COIMBATORE - 641 105

APPENDIX - B

GERDI GUTPERLE
AGASTHIYAR MUNI CHILD CARE CENTRE
4/23C, THAZHAKUDY ROAD, VELLAMADAM - 629 305,
KANYAKUMARI DISTRICT, SOUTH INDIA.

To
The Principal,
Ellen College of Nursing,
Coimbatoore.

Respected Madam,

In response to your letter in connection with dissertation work in partial fulfillment of the M.sc (N) under TN. Dr. MGR Medical University, Chennai, I am pleased to permit G. L. Auxlin Nisha to carry out her study on the effectiveness of kangaroo mother care on preterm babies without compromising our infection control policy during her study

Thanking You

Fr. Cruz M. Hieronymus
(Director)

Ph : (04652) 285708, Fax : (04652) 285785, Mob.: 99444 33317 Email : ggamccc@rediffmail.com
All correspondence should be addressed to the administrator
ggamccc / Print Form No. 017

APPENDIX - C

ARUL MISSION HOSPITAL
ISO 9001:2008 Certified Hospital

To
The Principal,
Ellen College of Nursing,
Coimbatoore.

Respected Madam,

In response to your letter in connection with dissertation work in partial fulfillment of the M.sc (N) under TN. Dr. MGR Medical University, Chennai, I am pleased to permit G. L. Auxlin Nisha to carry out her study on the effectiveness of kangaroo mother care on preterm babies without compromising our infection control policy during her study

Thanking You

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APPENDIX - D

ELLEN COLLEGE OF NURSING

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Dr.A.GUNASINGH EMMANUEL, M.A.,B.L.,Ph.D.,
Chairman & Correspondent

Date :
Ref :

REQUISITION FOR CONTENT VALIDITY

From

G.L.AUXLIN NISHA
II YEAR M.Sc (Nursing),
Ellen College of Nursing,
Coimbatore-641105.

Through

The Principal
Ellen College of Nursing,
Coimbatore-641105.

To

PRINCIPAL
ELLEN COLLEGE OF NURSING
NAVAKKARAI, COIMBATORE - 641 105

Respected Sir / Madam

Sub: Requisition for expert opinion and suggestion for content validity of the tools---Reg.

I am student of M.Sc (Nursing) II Year Ellen College of Nursing; Coimbatore affiliated to The Tamilnadu Dr.M.G.R.Medical University, Chennai. As a partial fulfillment of the M.Sc (Nursing) Programme. I am conducting 'A Study to assess the effectiveness of kangaroo mother care on preterm Babies' physiological behavioural and psychosocial outcome in Selected hospital at Kanyakumari.' I am hereby enclosing the following:-

1. Statement and Objectives of the Study
2. Hypotheses
3. Methodology
4. Tools
5. Intervention
6. Content Validity Certificate.

I kindly request your guidance and valuable suggestions on the content submitted with us. It would be helpful for me to precede my dissertation.

Thanking you

Yours faithfully

Place:

APPENDIX - E

ELLEN COLLEGE OF NURSING

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Dr.A.GUNASINGH EMMANUEL, M.A.,B.L.,Ph.D.,
Chairman & Correspondent

Date :
Ref :

CERTIFICATE OF VALIDATION

This is to certify that the tool submitted by Ms. G. L. AUXLIN NISHA. M.Sc (Nursing) II - Year student of Ellen College of Nursing; Coimbatore, Tamilnadu (Affiliated to The Tamilnadu Dr.M.G.R.Medical University, Chennai) is validated by undersigned and can proceed with this tool and conduct the dissertation entitled. 'A Study to assess the effectiveness of kangaroo mother care on preterm Babies ' physiological behavioral and psychosocial outcome in Selected hospital at Kanyakumari.'

Place: Coimbatore

Signature

Date:

Name and Designation

APPENDIX - F

LIST OF EXPERTS

Mrs. F.MEERA M.Sc. (N)

DEPARTMENT OF PEDIATRIC NURSING

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Mrs. SUJA M.Sc. (N)

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Mrs. PREMILA M.Sc. (N)

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NEHRU COLLEGE OF NURSING

VALLIOOR

Dr .M.THRAVIAM MOHAN. MBBBS.DCH.

PEDIATRICIAN

THIRAVIYAM PEDIATRIC CLINIC

NAGERCOIL

APPENDIX - I

கங்காரு குழந்தை பாதுகாப்பு முறை

1) **கங்காரு குழந்தை பாதுகாப்பு முறை என்றால் என்ன?**

தாயின் மார்பகங்களுக்கு இடையில் குழந்தையை கதகதப்பாக வைத்து பராமரிப்பது கங்காரு குழந்தை பாதுகாப்பு முறை எனப்படுகிறது.

2) **எந்த வகை குழந்தைகளுக்கு கங்காரு பாதுகாப்பு முறையைப் பயன்படுத்தலாம்?**

- குறைமாதக் குழந்தைகள்
- ஏடை குறைந்த குழந்தைகள்.

குறை மாதக் குழந்தைகள் அதாவது, குழந்தை கருதரித்து 37 வாரத்திற்கு முன் பிறக்கும் குழந்தைகளுக்கு இம்முறையை பயன்படுத்தலாம்.

குழந்தை குறைமாதத்தில் பிறப்பதன் மூலம் பலவிதமான நோய்கள் வருவதுடன் ஆரோக்கியம் இல்லாமல் இறக்கநேரிடும். எனவே இதனை தடுக்க கங்காரு குழந்தை பாதுகாப்பு முறை ஒரு எளிய இயற்கையான முறையாகும்.

பிறக்கும் எடை 2.5 கிலோ முதல் 3.5 கிலோ எடையினை சராசரி எடை என்றும் கூறலாம்.

2500 கிராமுக்கு கீழ் எடையோடு பிறக்கும் குழந்தைகளுக்கு இம்முறையை பயன்படுத்தலாம். இதன் மூலம் குழந்தையின் எடை நாளுக்குநாள் அதிகரிப்பதோடு குழந்தையின் அனைத்து உடல் உறுப்புகளும் ஆரோக்கியமாகவும் சீராகவும் இயங்கும்.

கங்காரு குழந்தை பாதுகாப்பு முறையின் பயன்கள்:

- குழந்தைக்கு நல்ல வெதுவெதுப்பு கிடைக்கிறது.
- குழந்தை அமைதியாக நீண்ட நேரம் தூங்குகிறது.
- தூங்கும் போது குழந்தையின் உடல் மற்றும் மூளை வளர்ச்சி சீரடைகிறது.
- தோலின் தடுப்பு சக்தி அதிகரிக்கிறது.
- எடை அதிகரிக்கிறது.
- மன அழுத்தம் குறைகிறது, குழந்தை அமைதி பெறுகிறது.
- தாய்ப்பால் குடிக்கும் நேரம் அதிகரிக்கிறது.
- குழந்தைக்கும் தாய்க்கும் இடையே பாசப்பிணைப்பை அதிகரிக்கிறது.
- தாயோடு ஒட்டி இருப்பதால் பாதுகாப்பு உணர்வும் மனத்திடமும் அடைகிறது.

கங்காரு குழந்தை பாதுகாப்பு முறைக்கு தயாரிப்பு செய்தல்:

- ❖ தாய் நன்குகுழித்து, மார்பகங்களை சுத்தம் செய்தல் வேண்டும்.
- ❖ பின்பு கைகளைசுத்தமாக வைத்தல் வேண்டும்.
- ❖ நீளமான முன்பு திறக்கக்கூடிய ஆடை அணியவேண்டும்.
- ❖ குழந்தைக்கு தலைகவசம், காலுறை அணிந்து மேலாடை முன்புறம் திறந்துவைத்தல் வேண்டும்.

முறை:

- ➢ நன்கு சாய்ந்த நாற்காலியில் சாய்ந்த நிலையில் தாய் அமர்தல் வேண்டும்.
- ➢ தாயின் ஆடையின் முன்புறத்தை திறந்து, குழந்தையை தாயின் மார்பகங்களுக்கு இடையே நிமிர்ந்த நிலையில் குழந்தையின்
- ➢ மார்புபகுதி தாயின் மார்பகத்தில் ஒட்டும் நிலையில் வைக்கவேண்டும்.
- ➢ குழந்தையின் தலையை ஒருபுறமாக திருப்பிவைத்தல் வேண்டும்.
- ➢ குழந்தையின் கால்களை தவளை போன்ற நிலையில் வைத்தல் வேண்டும்.
- ➢ 30-60 நிமிடங்கள் தொடர்ந்து இம்முறையை பயன்படுத்த வேண்டும்.
- ➢ ஒரு நாளைக்கு 2-3 தடவை இம்முறையை செய்தல் வேண்டும்.
- ➢ குழந்தையுடன் தாயும் சேர்ந்து நன்கு ஓய்வெடுக்க வேண்டும்.
- ➢ பிற சிந்தனைகளை தவிர்ந்து குழந்தையின் உணர்வோடு தாயின் உணர்வும் ஒன்றித்திருக்க வேண்டும்.

தாய் இல்லாத நிலையில்:

குழந்தையின் தாய் இல்லாத நிலையில், குழந்தையின் தந்தை அல்லது பாட்டி, சித்தி போன்றவர்கள் கூட இந்த முறையை பயன்படுத்தலாம்.

வீட்டில் சென்ற பின்:

மருத்துவமனையில் இருந்து வீட்டிற்கு சென்ற பின்னும் இம்முறையை தொடர்ந்து வருவது நல்லது.

வாரத்திற்கு ஒருமுறை அல்லது இரண்டு முறை செய்து வந்தால் நன்கு பயன் கிடைக்கும்.

குழந்தை ஆரோக்கியமாக 2.5 கிலோ எடையை அடைந்ததும் இம்முறையை நிறுத்தலாம்.

APPENDIX - G

கங்காரு குழந்தை பாதுகாப்பு முறை

மதிப்பீடு ஓட்டம் தாள்

குறைமாதக் குழந்தையின் பண்பு :

1. பாலினம்
   - அ) ஆண் ( )
   - ஆ) பெண் ( )
   - இ) திருநங்கை ( )

2. கர்ப்ப காலம் (வாரம்)
   - அ) 32 வாரத்திற்கு கீழ் ( )
   - ஆ) 32 - 34 வாரம் ( )
   - இ) 34 – 36 வாரத்திற்கு கீழ் ( )

3. பிறந்த எடை (கிராம்)
   - அ) 1500 –க்கு குறைவான ( )
   - ஆ) 1500 – 2500 ( )
   - இ) 2000 – 2500 குறைவான ( )

4. கால வயது
   - அ) 1 – 10 க்கு குறைவான ( )
   - ஆ) 10 – 20 க்கு குறைவான ( )
   - இ) 20 – 30 க்கு குறைவான ( )
   - ஈ) 30 க்கு மேல் ( )

5. அப்கார் மதிப்பு
   - அ) 7 மற்றும் அதற்கு மேல் ( )
   - ஆ) 4 – 6 ( )
   - இ) 3 க்கு கீழ் ( )

6. தாயின் பண்பு
   1. வயது

அ) 20 க்கு கீழ் ( )
ஆ) 20 – 30 ( )
இ) 30 – 40 க்கு கீழ் ( )

2. கல்வி தகுதி
   அ) படிப்பறிவற்ற ( )
   ஆ) 1 – 8 ஆம் வகுப்பு ( )
   இ) 8 – 12 ஆம் வகுப்பு ( )
   ஈ) உயர் கல்வி ( )
   உ) பட்ட படிப்பு ( )

3. தொழில்
   அ) வேலைக்கு செல்பவர் ( )
   ஆ) இல்லத்தரசி ( )

4. குழந்தைகள்
   அ) 3 க்கு கீழ் ( )
   ஆ) 3 – 4 ( )
   இ) 4 க்கு மேல் ( )

5. பிரசவ முறை
   அ) சுக பிரசவம் ( )
   ஆ) அறுவை சிகிச்சை ( )

<u>கங்காரு குழந்தை பாதுகாப்பு முறையால் ஏற்பட்ட உடலியல் விளைவு :</u>

1. இதயத் துடிப்பு (நிமிடத்திற்கு)
   அ) குறை இதயத் துடிப்பு (<120) ( )
   ஆ) சாதாரண இதயத் துடிப்பு (120 – 150) ( )
   இ) மிகை இதயத் துடிப்பு (>150) ( )

2. சுவாச விகிதம் (நிமிடத்திற்கு)
   அ) <35 ( )
   ஆ) 35 – 50 ( )
   இ) >50 ( )

3. வெப்பம் (டிகிரீ செல்சியஸ்)

அ) தாழ் வெப்பநிலை <36.5 ( )

ஆ) சாதாரண வெப்பநிலை 36.5 – 37.2 ( )

இ) உயர் வெப்பநிலை >37.2 ( )

கங்காரு குழந்தை பாதுகாப்பு முறையின் மூலம் ஏற்பட்ட நடத்தை விளைவு:

1. அழுகை

அ) உரத்த குரல் அழுகை ( )

ஆ) உச்சஸ் தாயியில் அழுதல் ( )

இ) சத்தம் குறைத்து அழுதல் ( )

ஈ) சாதாரண அழுகை ( )

2. உறக்க பண்பு.

அ) அமைதியான உறக்கம் ( )

ஆ) தடங்கல் உறக்கம் ( )

3. உணவு.

அ) தாய் பால் ( )

ஆ) பால் பொடி ( )

கங்காரு குழந்தை பாதுகாப்பு முறையின் மூலம் ஏற்பட்ட உளவியல் சமுக விளைவு.

1. தாய் சேய் இணைப்பு.

அ) குழந்தையுடன் நெருங்கிய உணர்வு. ( )

ஆ) குழந்தையிடமிருந்து விலகியது போன்ற உணர்வு. ( )

2. தாயின் திருப்த்தி.

அ) குழந்தையுடன் இருப்பது மகிழ்வை தருகின்றது. ( )

ஆ) குழந்தையுடன் இருப்பது எரிச்சலூட்டுகிறது. ( )

3. தாயின் கருத்து.

அ) கங்காரு குழந்தை பாதுகாப்பு மிக எளிதானது. ( )

ஆ) கங்காரு குழந்தை பாதுகாப்பு பற்றி போதிய அறிவு இல்லை பயமாக தோன்றுகிறது ( )

DURATION	SPECIFIC OBJECTIVES	CONTENT	TEACHING/LEARNING ACTIVITIES	EVALUATION
2 min *3 min*	define KMC explain the eligibility of KMC	INTRODUCTION Kangaroo care, or skin-to-skin care, is a technique practiced on newborn, usually preterm, infants wherein the infant is held, skin-to-skin, with an adult. Kangaroo care for pre-term infants may be restricted to a few hours per day, but if they are medically stable that time may be extended. Some parents may keep their babies in-arms for many hours per day. Eligibility criteria Originally babies who are eligible for kangaroo care include pre-term infants weighing less than 1,500 grams (3.3 lb), and breathing independently. Cardiopulmonary monitoring, oximetry, supplemental oxygen or nasal (continuous positive airway pressure) ventilation, intravenous infusions, and monitor leads do not prevent	lecture cum demonstration	What is KMC

		kangaroo care. In fact, babies who are in kangaroo care tend to be less prone to apnea and bradycardia and have stabilization of oxygen needs. During the early 1990s, the concept was advocated in North America for premature babies in NICU and later for full term babies. Research has been done in developed countries but there is a lag in implementation of kangaroo care due to ready access of incubators and technology. Restrictions for eligibility to receive skin-to-skin contact are becoming fewer, the main constraint has probably been caregiver confidence and experience.	lecture cum demonstration	What is the eligibility KMC

10 min	demonstrate the techniques of KMC	Technique In kangaroo care, the baby wears only a small diaper and a hat and is placed in a flexed (fetal position) with maximal skin-to-skin contact on parent's chest. The baby is secured with a wrap that goes around the naked torso of the adult, providing the baby with proper support and positioning (maintain flexion), constant containment without pressure points or creases, and protecting from air drafts (thermoregulation). If it is cold, the parent may wear a shirt or hospital gown with an opening to the front and a blanket over the wrap for the baby The tight bundling is enough to stimulate the baby: vestibular stimulation from the parent's breathing and chest movement, auditory stimulation from the parent's voice and natural sounds of breathing and the heartbeat, touch by the skin of the parent, the	lecture cum demonstration	How will you apply KMC

		wrap, and the natural tendency to hold the baby. All this stimulation is important for the baby's development. "Birth Kangaroo Care" places the baby in kangaroo care with the mother within one minute after birth and up to the first feeding. The American Academy of Pediatrics recommends this practice, with minimal disruption for babies that don't require life support. The baby's head must be dried immediately after birth and then the baby is placed with a hat on the mother's chest. Measurements, etc. are performed after the first feeding. According to the US Institute of Kangaroo Care, healthy babies should maintain skin-to-skin contact method for about 3 months so that both baby and mother are established in breastfeeding and have achieved physiological recovery from the birth process.	lecture cum demonstration	

		For premature babies, this method can be used continuously around the clock or for sessions of no less than one hour in duration (the length of one full sleep cycle.) It can be started as soon as the baby is stabilized, so it may be at birth or within hours, days, or weeks after birth. Kangaroo care is different from the practice of baby wearing. In kangaroo care, the adult and the baby are skin-to-skin and chest-to-chest, securing the position of the baby with a stretchy wrap, and it is practiced to provide developmental care to premature babies for 6 months and full-term newborns for 3 months. In baby wearing the adult and the child are fully clothed, the child may be in the front or back of the adult, can be done with many different types of carriers and slings, and is commonly practiced with infants and toddlers.	lecture cum demonstration	

5min	list out the benefits of KMC	Benefits For Parents Kangaroo care is beneficial for parents because it promotes attachment and bonding, improves parental confidence, and helps to promote increased milk production and breastfeeding success. For fathers Both preterm and full term infants benefit from skin to skin contact for the first few weeks of life with the baby's father as well. The new baby is familiar with the father's voice and it is believed that contact with the father helps the infant to stabilize and promotes father to infant bonding. If the infant's mother had a caesarean birth, the father can hold their baby in skin-to-skin contact while the mother recovers from the anesthetic	lecture cum demonstration	What are all the benefits of KMC

		<u>For pre-term and low-birth-weight infants</u> Kangaroo care arguably offers the most benefits for pre-term and low-birth-weight infants, who experience more normalized temperature, heart rate, and respiratory rate, increased weight gain, fewer nosocomial infections and reduced incidence of respiratory tract disease. Additionally, studies suggest that preterm infants who experience kangaroo care have improved cognitive development, decreased stress levels, reduced pain responses, normalized growth, and positive effects on motor development. Kangaroo care also helps to improve sleep patterns of infants, and may be a good intervention for colic. Earlier discharge	lecture cum demonstration	

		from hospital is also a possible outcome Finally, kangaroo care helps to promote frequent breastfeeding, and can enhance mother-infant bonding. Evidence from a recent systematic review supports the use of kangaroo mother care as a substitute for conventional neonatal care in settings where resources are limited <u>For institutions</u> Kangaroo care often results in reduced hospital stays, reduced need for expensive healthcare technology, increased parental involvement and teaching opportunities, and better use of healthcare dollars. <u>For the community</u> Overall, kangaroo care helps to reduce morbidity and mortality, provides opportunities for teaching during postnatal follow-up visits, and decreases hospital-associated costs.		

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Name of investigator	:	Mrs. Auxlin Nisha
Topic	:	KMC
Group	:	Mothers
Sample Strength	:	30
Date / Time	:	
Venue	:	Arul mission hospital
Duration	:	30 minutes
Method of teaching	:	lecture cum demonstration
A V Aids	:	L.C.D

GENERAL OBJECTIVES:

At the end of the session the group will gain in depth knowledge regarding KMC and develop attitude and skill in caring preterm babied

SPECIFIC OBJECTIVES:

The group will be able to:

- define KMC
- explain the eligibility of KMC
- demonstrate the techniques of KMC
- list out the benefits of KMC

APPENDIX - H

LESSON PLAN ON

KANGAROO MOTHER CARE

PREPARED BY:

Mrs G.L Auxlin Nisha

M.Sc Nursing IInd Year

Ellen College of Nursing,

Coimbatore.

APPENDIX - I

Kangaroo Mother Care

1. What is Kangaroo Mother Care (KMC)

Kangaroo Mother Care (KMC) is a special way of caring of low birth weight babies. It fosters their health and well being by promoting effective thermal control, breastfeeding, infection prevention and bonding.

In KMC, the baby is continuously kept in skin-to-skin contact by the mother and breastfed exclusively to the utmost extent, KMC is initiated in the hospital and continued at home.

Components of KMC
- Skin-to-skin contact
- Exclusive breastfeeding

Pre-requisites of KMC
- Support to the mother in hospital and at home
- Post-discharge follow up

1.1 The two components of KMC are:

i. Skin-to-skin contact
Early, continuous and prolonged skin-to-skin contact between the mother and her baby is the basic component of KMC. The infant is placed on her mother's chest between the breasts.

ii. Exclusive breastfeeding
The baby on KMC is breastfed exclusively. Skin-to-skin contact promotes lactation and facilitates the feeding interaction.

Skin to skin contact of the infant on the mother's chest

1.2 The two pre-requisites of KMC are:

i. Support to the mother in hospital and at home
A mother cannot successfully provide KMC all alone. She would require counseling along with supervision from care-providers, and assistance and cooperation from her family members.

ii. Post-discharge follow up
KMC is continued at home after early discharge from the hospital. A regular follow up and access to health providers for solving problem are crucial to ensure safe and successful KMC at home.

2. Benefits of KMC

Breastfeeding: Studies have revealed that KMC results in increased breastfeeding rates as well as increased duration of breastfeeding. Even when initiated late and for a limited time during day and night, KMC has been shown to exert a beneficial effect on breastfeeding.

Thermal control: Prolonged skin-to-skin contact between the mother and her preterm/ LBW infant provides effective thermal control with a reduced risk of hypothermia. For stable babies, KMC is at least equivalent to conventional care with incubators in terms of safety and t hermal protection.

Early discharge: Studies have shown that KMC cared LBW infants could be discharged from the hospital earlier than the conventionally managed babies. The babies gained more weight on KMC than on conventional care.

Less morbidity: Babies receiving KMC have more regular breathing and less predisposition to apnea. KMC protects against nosocomial infections. Even after discharge from the hospital, the morbidity amongst babies managed by KMC is less. KMC is associated with reduced incidence of severe illness including pneumonia during infancy.

Other effects: KMC helps both infants and parents. Mothers are less stressed during kangaroo care as compared with a baby kept in incubator. Mothers prefer skin-to-skin contact to conventional care. They report a stronger bonding with the baby, increased confidence, and a deep satisfaction that they were able to do something special for their babies. Fathers felt more relaxed, comfortable and better bonded while providing kangaroo care.

3. Requirements for KMC implementation

- Training of nurses, physicians and other staff involved in the care of the mother and the baby.
- Educational material such as information sheets, posters, video films on KMC in local language should be available to the mothers, families and community.
- If possible, reclining chairs in the nursery and postnatal wards, and beds with adjustable back rest should be arranged. Mother can provide KMC sitting on an ordinary chair or in a semi-reclining posture on a bed with the help of pillows.

- Once KMC is implemented, nurses and other staff appreciate KMC because of the health benefits to the babies and the satisfaction expressed by the mothers.
- KMC does not require extra staff.

4 Eligibility criteria

4.1. Baby

All stable LBW babies are eligible for KMC. However, very sick babies needing special care should be cared under radiant warmer initially. KMC should be started after the baby is hemo -dynamically stable. Guidelines for practicing KMC include:

I. Birth weight >1800 g : These babies are generally stable at birth. Therefore, in most of them KMC can be initiated soon after birth.

II. Birth weight 1200-1799 g : Many babies of this group have significant problems in neonatal period. It might take a few days before KMC can be initiated. If such a baby is born in a place where neonatal care services are inadequate, he should be transferred to a proper facility immediately after birth, along with the mother/ family member. He should be transferred to a refferal hospital after initial stabilization and appropriate management, One of the best ways of transporting small babies is by keeping them in continuous skin-to- skin contact with the mother / family member during transport.

III. Birth weight <1200 g : Frequently, these babies develop serious prematurity-related morbidity often starting soon after birth. They benefit the most from in-utero transfer to the institutions with neonatal intensive care facilities. It may take days to weeks before baby's condition allows initiation of KMC.

- KMC can be initiated in a baby who is otherwise stable but may still be on intravenous fluids, tube feeding and/or oxygen.

4.2 Mother

All mothers can provide KMC, irrespective of age, parity, education, culture and religion. The following points must be taken into consideration when counseling on KMC:

i. Willingness: The mother must be willing to provide KMC. Healthcare providers should counsel and motivate her. Once the mother realises the benefits of KMC for her baby, she will learn and undertake KMC.

ii. General health and nutrition: The mother should be free from serious illness to be able to provide KMC. She should receive adequate diet and supplements recommended by her physician.

iii. Hygiene: The mother should maintain good hygiene: daily bath/sponge, change of clothes, hand washing, short and clean finger nails.

iv. Supportive family: Apart from supporting the mother, family members should also be encouraged to provide KMC when mother wishes to take rest. Mother would need family's cooperation to deal with her conventional responsibilities of household chores till the baby requires KMC.

v. Supportive community: Community awareness about the benefits should be created. This is particularly important when there are social, economic or family constrain

5. Preparing for KMC

5.1 Counseling

When baby is ready for KMC, arrange a time that is convenient to the mother and her baby. The first few sessions are important and require extended interaction. Demonstrate to her the KMC procedure in a caring, gentle manner and with patience. Answer her queries and allay her anxieties. Encourage her to bring her mother/mother in law, husband or any other member of the family. It helps in building positive attitude of the family and ensuring family support to the mother which is particularly crucial for post-discharge home-based KMC. It is helpful that the mother starting KMC, interacts with someone already practicing KMC for her baby.

5.2 Mother's clothing

KMC can be provided using any front-open, light dress as per the local culture. KMC works well with blouse and sari, gown or shawl. A suitable apparel that can retain the baby for extended period of time can be adapted locally.

5.3 Baby's clothing

Baby is dressed with cap, socks, nappy, and front-open sleeveless shirt or 'jhabala'.

6. The KMC procedure

6.1 Kangaroo positioning

- The baby should be placed between the mother's breasts in an upright position.
- The head should be turned to one side and in a slightly extended position. This slightly extended head position keeps the airway open and allows eye to eye contact between the mother and her baby.
- The hips should be flexed and abducted in a "frog" position; the arms should also be flexed.
- Baby's abdomen should be at the level of the mother's epigastrium. Mother's breathing stimulates the baby, thus reducing the occurrence of apnea.
- Support the baby's bottom with a sling/binder.

Baby upright between mother's bre

6.2 Monitoring

Babies reciving KMC should be monitored carefully especially during the initial stages. Nursing staff should make sure that baby's neck position is neither too flexed nor too extended, airway is clear, breathing is regular, color is pink and baby is maintaining temperature. Mother should be involved in observing the baby during KMC so that she herself can continue monitoring at home.

- Ensure that baby's
  - neck is not too flexed or too extended,
  - breathing is normal, and
  - feet and hands are warm

6.3 Feeding

The mother should be explained how to breastfeed while the baby is in KMC position. Holding the baby near the breast stimulates milk production. She may express milk while the baby is still in KMC position. The baby could be fed with paladai, spoon or tube, depending on the condition of the baby.

6.4 Privacy

KMC unavoidably requires some exposure on the part of the mother. This can make her nervous and could be de-motivating. The staff must respect mother's sensitivities in this regard and ensure culturally- acceptable privacy standards in the nursery and the wards where KMC is practiced.

7. Time of initiation

KMC can be started as soon as the baby is stable. Babies with severe illnesses or requiring special treatment should be managed according to the unit protocol. Short KMC sessions can be initiated during recovery with ongoing medical treatment (IV fluids, oxygen therapy). KMC can be provided while the baby is being fed via orogastric tube or on oxygen therapy.

8. Duration of KMC

- Skin-to-skin contact should start gradually in the nursery, with a smooth transition from conventional care to continuous KMC.
- Sessions that last less than one hour should be avoided because frequent handling may be stressful for the baby.
- The length of skin-to-skin contacts should be gradually increased up to 24 hours a day , interrupted only for changing diapers.
- When the baby does not require intensive care, she should be transferred to the post-natal ward where KMC should be continued.

9. Can the mother continue KMC during sleep and resting?

A comfortable chair with adjustable back may be useful to provide KMC during sleep and rest. In the KMC ward or at home, the mother can sleep with the baby in kangaroo position in a reclined or semi- recumbent position, about 15 -30^{o} degrees from above the ground. This can be achieved with an adjustable bed, if available, or with several pillows on an ordinary bed. It has been observed that this position may decrease the risk of apnea in a baby. A supporting garment to carry the baby in kangaroo position will allow the mother or the father or the relatives to sleep even with the baby in the kangaroo position. When the mother and the baby are well adapted to KMC they can be discharged from the hospital.

When mother is not available, other family member such as grandmother, father or other relative can provide KMC.

10. From hospital to home

10.1 Criteria to transfer the baby from nursery to the ward

Standard criteria of the unit for transferring baby from the nursery to the post-natal ward should be as follows :-

- Stable baby
- Gaining weight
- Mother confident to look after the baby

10.2 Discharge criteria

The standard policy of the unit for discharge from the hospital should be followed. Generally the following criteria is accepted at most centres :

- Baby's general health is good and no evidence of infection
- Feeding well, and receiving exclusively or predominantly breast milk.
- Gaining weight (at least 15-20 gm/kg/day for at least three consecutive days)
- Maintaining body temperature satisfactorily for at least three consecutive days in room temperature.
- The mother and family members are confident to take care of the baby in KMC and should be asked to come for follow-up visits regularly.

11. When should KMC be discontinued ?

When the mother and baby are comfortable, KMC is continued for as long as possible, at the institution & then at home. Often this is desirable until the baby's gestation reaches term or the weight is around 2500 g. She starts wriggling to show that she is uncomfortable, pulls her limbs out, cries and fusses every time the mother tries to put her back skin to skin. This is the time to wean the baby from KMC. Mothers can provide skin to skin contact occasionally after giving the baby a bath and during cold nights.

12. Post-discharge follow up

Close follow up is a fundamental pre-requisite of KMC practice. Although each unit should formulate its own policy of follow up.

In general, a baby is followed once or twice a week till 37-40 weeks of gestation or till the bay reaches 2.5-3 kg of weight. (Smaller the baby at discharge, the earlier and more frequent follow-up visits should be). Thereafter, a follow up once in 2-4 weeks may be enough till 3 months of post-conception age. Later the baby should be seen at an interval of 1-2 months during first year of life.

The baby should gain adequate weight (15-20 gm/kg/day up to 40 weeks of post-conception age and 10 gm/kg/ day subsequently). More frequent visits should be made if the baby is not growing well or his condition demands.

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APPENDIX - J

Evaluation Criteria for Validation of Intervention on kangaroo mother care

The expert is requested to go through following evaluation criteria checklist prepared for validating the intervention on effectiveness of kangaroo mother care in selected hospital at Kanyakumari.

There are three columns given for responses and facilitate your remarks in the remarks column given.

INTERPRETATION COLUMNS

Meets criteria - Column I

Partially meets the criteria - Column II

Does not meet the criteria - Column III

S.NO	CRITERIA	I	II	III	REMARKS
I	CONTENT				
1	SELECTION OF CONTENT				
1.1	Content reflects the objectives				
1.2	Content has up to date knowledge				
1.3	Content provides correct and accurate information				
1.4	Content coverage				
2	ORGANIZATION OF CONTENT				
2.1	Logical sequences				

2.2	Continuity				
2.3	Integration				
II	LANGUAGE				
1	Local language is used in simple and in understandable dialogues				
2	Technical terms are explained at the level of learners ability				
III	FEASIBILITY/PRACTICABILITY				
1	Is suitable to the clients				
2	Permit self learning				
3	Acceptable to clients				
4	Interesting and useful to clients				
5	Suitable for setting				
IV	ANY OTHER SUGGESTIONS				
	•				
	•				
	•				